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2013
EDITION

CO₂ EMISSIONS FROM FUEL COMBUSTION



International
Energy Agency

2013
EDITION

CO₂ EMISSIONS FROM FUEL COMBUSTION

In recognition of fundamental changes in the way governments approach energy-related environmental issues, the IEA has prepared this publication on CO₂ emissions from fuel combustion. This annual publication was first published in 1997 and has become an essential tool for analysts and policy makers in many international fora such as the Conference of the Parties.

The eighteenth session of the Conference of the Parties to the Climate Change Convention (COP 18), in conjunction with the eighth meeting of the Parties to the Kyoto Protocol (CMP 8), will be meeting in Doha, Qatar from 26 November to 7 December 2012.

The data in this book are designed to assist in understanding the evolution of the emissions of CO₂ from 1971 to 2010 for more than 140 countries and regions by sector and by fuel. Emissions were calculated using IEA energy databases and the default methods and emission factors from the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*.

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**CO₂ EMISSIONS
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INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA), an autonomous agency, was established in November 1974. Its primary mandate was – and is – two-fold: to promote energy security amongst its member countries through collective response to physical disruptions in oil supply, and provide authoritative research and analysis on ways to ensure reliable, affordable and clean energy for its 28 member countries and beyond. The IEA carries out a comprehensive programme of energy co-operation among its member countries, each of which is obliged to hold oil stocks equivalent to 90 days of its net imports. The Agency's aims include the following objectives:

- Secure member countries' access to reliable and ample supplies of all forms of energy; in particular, through maintaining effective emergency response capabilities in case of oil supply disruptions.
- Promote sustainable energy policies that spur economic growth and environmental protection in a global context – particularly in terms of reducing greenhouse-gas emissions that contribute to climate change.
- Improve transparency of international markets through collection and analysis of energy data.
- Support global collaboration on energy technology to secure future energy supplies and mitigate their environmental impact, including through improved energy efficiency and development and deployment of low-carbon technologies.
- Find solutions to global energy challenges through engagement and dialogue with non-member countries, industry, international organisations and other stakeholders.

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Energy Agency**

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FOREWORD

Recent years have witnessed a fundamental change in the way governments approach energy-related environmental issues. Promoting sustainable development and combating climate change have become integral aspects of energy planning, analysis and policy making in many countries, including all IEA member states.

In recognition of the importance attached to the environmental aspects of energy, the IEA Secretariat has prepared this edition of its published statistics on CO₂ emissions from fossil-fuel combustion. These data are also available on CD-ROM and on the Internet.

The purpose of this volume is to put our best and most current information in the hands of those who need it, including in particular the participants in the UNFCCC process. The IEA Secretariat is a contributor to the official Intergovernmental Panel on Climate Change (IPCC) methodologies for estimating greenhouse-gas emissions. The IEA's energy data are the figures most often cited in the field. For these reasons, we felt it appropriate to publish this information in a comprehensive form.

It is our hope that this book will assist the reader in better understanding the evolution of CO₂ emissions from fuel combustion from 1971 to 2011 for more than 140 countries and regions, by sector and by fuel. This publication incorporates comments and suggestions received since the first edition in November 1997.

Most of the data presented in this publication are only for energy-related CO₂. Thus they may differ from countries' official submissions of emissions inventories to the UNFCCC Secretariat.

In addition, summary data for CO₂ from non-energy-related sources and gas flaring, and emissions of CH₄, N₂O, HFC, PFC and SF₆ are shown in Part III in cooperation with the PBL Netherlands Environmental Assessment Agency and the Joint Research Centre of the European Commission (JRC).

The publication also includes information on "Key Sources" from fuel combustion, as developed in the *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*.

This report is published under my responsibility as Executive Director of the IEA and does not necessarily reflect the views of IEA member countries.

Maria Van der Hoeven
Executive Director

What's New?

Decomposition of CO₂ emissions into drivers (Kaya identity): graphs and tables

In this edition, new graphs and tables present the decomposition of CO₂ emissions into drivers, following the “Kaya identity”. CO₂ emissions are decomposed into the product of four factors: population, GDP/population (per capita economic output), TPES/GDP (energy intensity of the economic output), and CO₂/TPES (carbon intensity of the energy mix). Such decomposition helps to assess the relative contributions of those different factors towards trends in CO₂ emissions, at the country and global levels.

The layout of summary tables, country graphs and country tables in Part II has been modified accordingly. For a complete description of the methodology used, please see Part I, *Chapter 1: IEA emissions estimates*.

TABLE OF CONTENTS

2011 CO₂ EMISSIONS OVERVIEW

Recent trends in CO ₂ emissions from fuel combustion.....	xiii
Regional aspects of the energy-climate challenge.....	xxvii

PART I: METHODOLOGY

1. IEA emissions estimates	I.3	4. Geographical coverage	I.21
2. Units and conversions	I.13	5. IPCC methodologies.....	I.25
3. Indicator sources and methods	I.15		

PART II: CO₂ EMISSIONS FROM FUEL COMBUSTION

SUMMARY TABLES

CO ₂ emissions: Sectoral Approach	II.4	Population.....	II.43
CO ₂ emissions: Reference Approach	II.16	CO ₂ emissions / TPES	II.46
CO ₂ emissions from international marine bunkers	II.19	CO ₂ emissions / GDP.....	II.49
CO ₂ emissions from international aviation bunkers	II.22	CO ₂ emissions / population.....	II.55
CO ₂ emissions by sector in 2011.....	II.25	Per capita emissions by sector in 2011	II.58
CO ₂ emissions with electricity and heat allocated to consuming sectors in 2011	II.28	Per capita emissions with electricity and heat allocated to consuming sectors in 2011	II.61
Total primary energy supply	II.31	Electricity output	II.64
GDP.....	II.37	CO ₂ emissions per kWh.....	II.67
		CO ₂ emissions and drivers (Kaya decomposition).....	II.79

GLOBAL AND REGIONAL TOTALS

World	II.98	OECD Asia Oceania.....	II.120
<i>Annex I Parties</i>	II.100	OECD Europe.....	II.122
<i>Annex II Parties</i>	II.102	European Union - 27.....	II.124
<i>North America</i>	II.104	Non-OECD Europe and Eurasia	II.126
<i>Europe</i>	II.106	Africa.....	II.128
<i>Asia Oceania</i>	II.108	Asia (excluding China).....	II.130
<i>Economies in Transition</i>	II.110	China (including Hong Kong)	II.132
<i>Non-Annex I Parties</i>	II.112	Non-OECD Americas.....	II.134
<i>Annex I Kyoto Parties</i>	II.114	Middle East.....	II.136
OECD Total	II.116		
OECD Americas.....	II.118		

COUNTRY TABLES

Albania	II.140	Austria	II.152
Algeria.....	II.142	Azerbaijan.....	II.154
Angola.....	II.144	Bahrain	II.156
Argentina.....	II.146	Bangladesh	II.158
Armenia.....	II.148	Belarus	II.160
Australia	II.150	Belgium	II.162

Benin	II.164	Jordan	II.270
Bolivia	II.166	Kazakhstan	II.272
Bosnia and Herzegovina.....	II.168	Kenya.....	II.274
Botswana.....	II.170	Democratic People's Republic of Korea	II.276
Brazil.....	II.172	Korea	II.278
Brunei Darussalam.....	II.174	Kosovo.....	II.280
Bulgaria.....	II.176	Kuwait	II.282
Cambodia	II.178	Kyrgyzstan.....	II.284
Cameroon	II.180	Latvia	II.286
Canada.....	II.182	Lebanon	II.288
Chile	II.184	Libya.....	II.290
People's Republic of China.....	II.186	Lithuania.....	II.292
Chinese Taipei.....	II.188	Luxembourg	II.294
Colombia.....	II.190	Former Yugoslav Republic of Macedonia.....	II.296
Congo.....	II.192	Malaysia	II.298
Democratic Republic of Congo.....	II.194	Malta.....	II.300
Costa Rica	II.196	Mexico.....	II.302
Côte d'Ivoire	II.198	Republic of Moldova.....	II.304
Croatia.....	II.200	Mongolia.....	II.306
Cuba	II.202	Montenegro.....	II.308
Cyprus	II.204	Morocco.....	II.310
Czech Republic	II.206	Mozambique	II.312
Denmark.....	II.208	Myanmar.....	II.314
Dominican Republic.....	II.210	Namibia	II.316
Ecuador	II.212	Nepal.....	II.318
Egypt	II.214	Netherlands.....	II.320
El Salvador.....	II.216	Netherlands Antilles	II.322
Eritrea.....	II.218	New Zealand.....	II.324
Estonia.....	II.220	Nicaragua.....	II.326
Ethiopia	II.222	Nigeria	II.328
Finland	II.224	Norway	II.330
France.....	II.226	Oman	II.332
Gabon	II.228	Pakistan.....	II.334
Georgia.....	II.230	Panama	II.336
Germany.....	II.232	Paraguay	II.338
Ghana	II.234	Peru.....	II.340
Gibraltar	II.236	Philippines	II.342
Greece	II.238	Poland	II.344
Guatemala	II.240	Portugal.....	II.346
Haiti.....	II.242	Qatar	II.348
Honduras	II.244	Romania.....	II.350
Hong Kong, China	II.246	Russian Federation	II.352
Hungary.....	II.248	Saudi Arabia	II.354
Iceland.....	II.250	Senegal	II.356
India	II.252	Serbia.....	II.358
Indonesia	II.254	Singapore.....	II.360
Islamic Republic of Iran.....	II.256	Slovak Republic.....	II.362
Iraq	II.258	Slovenia	II.364
Ireland	II.260	South Africa.....	II.366
Israel.....	II.262	Spain.....	II.368
Italy	II.264	Sri Lanka	II.370
Jamaica.....	II.266	Sudan	II.372
Japan.....	II.268	Sweden	II.374

Switzerland.....	II.376	United Arab Emirates	II.398
Syrian Arab Republic.....	II.378	United Kingdom	II.400
Tajikistan.....	II.380	United States.....	II.402
United Republic of Tanzania.....	II.382	Uruguay	II.404
Thailand	II.384	Uzbekistan	II.406
Togo	II.386	Venezuela	II.408
Trinidad and Tobago.....	II.388	Vietnam	II.410
Tunisia.....	II.390	Yemen.....	II.412
Turkey	II.392	Zambia.....	II.414
Turkmenistan.....	II.394	Zimbabwe	II.416
Ukraine.....	II.396		

PART III: GREENHOUSE-GAS EMISSIONS

1. Shares and trends in GHG emissions	III.3	3. Total GHG emissions	III.28
2. Sources and methods.....	III.11		

Kyoto Protocol base years

The year 1990 should be the base year for the estimation and reporting of inventories. According to the provisions of Article 4.6 of the Convention and Decisions 9/CP.2 and 11/CP.4, the following Annex I Parties that are undergoing the process of transition to a market economy, are allowed to use a base year or a period of years other than 1990, as follows:

Bulgaria:	to use 1988
Hungary:	to use the average of the years 1985 to 1987
Poland:	to use 1988
Romania:	to use 1989
Slovenia:	to use 1986

ABBREVIATIONS

Btu:	British thermal unit
GJ:	gigajoule
GtC:	gigatonnes of carbon
GWh:	gigawatt hour
J:	joule
kcal:	kilocalorie
kg:	kilogramme
kt:	thousand tonnes
ktoe:	thousand tonnes of oil equivalent
kWh:	kilowatt hour
MJ:	megajoule
Mt:	million tonnes
Mtoe:	million tonnes of oil equivalent
m ³ :	cubic metre
PJ:	petajoule
t:	metric ton = tonne = 1 000 kg
tC:	tonne of carbon
Tcal:	teracalorie
TJ:	terajoule
toe:	tonne of oil equivalent = 10 ⁷ kcal
CEF:	carbon emission factor
CHP:	combined heat and power
GCV:	gross calorific value
GDP:	gross domestic product
HHV:	higher heating value = GCV
LHV:	lower heating value = NCV
NCV:	net calorific value
PPP:	purchasing power parity
TPES:	total primary energy supply
AIJ:	Activities Implemented Jointly under the United Nations Framework Convention on Climate Change
Annex I:	See Chapter 4, Geographical coverage
Annex II:	See Chapter 4, Geographical coverage
CDM:	Clean Development Mechanism
Convention:	United Nations Framework Convention on Climate Change
COP:	Conference of the Parties to the Convention
EITs:	Economies in Transition (see Chapter 4, Geographical coverage)
IEA:	International Energy Agency
IPCC:	Intergovernmental Panel on Climate Change
OECD:	Organisation for Economic Co-operation and Development
SBI:	Subsidiary Body for Implementation
SBSTA:	Subsidiary Body for Scientific and Technological Advice
TCA:	Technology Co-operation Agreement
UN:	United Nations
UNECE:	United Nations Economic Commission for Europe
UNFCCC:	United Nations Framework Convention on Climate Change
e	estimated
..	not available
-	nil
x	not applicable
+	growth greater than 1 000%

Important cautionary notes

- The estimates of CO₂ emissions from fuel combustion presented in this publication are calculated using the IEA energy balances and the default methods and emission factors from the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*. There are many reasons why **the IEA Secretariat estimates may not be the same as the figures that a country submits to the UNFCCC**, even if a country has accounted for all of its energy use and correctly applied the *IPCC Guidelines*.
- In this publication, the IEA Secretariat presents CO₂ emissions calculated using both the IPCC Reference Approach and the IPCC Tier 1 Sectoral Approach. In some of the OECD non-member countries, there can be **large differences between the two sets of calculations** due to various problems in some energy data. As a consequence, this can lead to different emission trends between 1990 and 2011 for certain countries. Please see Chapter 1: *IEA emissions estimates* for further details.
- Information on “key sources” from fuel combustion, as developed in the *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, are only given for combustion sources and will not include key sources from fugitive emissions, industrial processes, solvents, agriculture and waste. Please see Chapter 1: *IEA emissions estimates* and Chapter 5: *IPCC methodologies* for further information.

Energy data on OECD member and non-member countries¹ are collected by the Energy Data Centre (EDC) of the IEA Secretariat, headed by Mr. Jean-Yves Garnier. The IEA would like to thank and acknowledge the dedication and professionalism of the statisticians working on energy data in the countries. Mr. Aidan Kennedy was responsible for the CO₂ emissions from fuel combustion estimates and for the preparation of the publication. Desktop publishing support was provided by Ms. Sharon Burghgraeve. Ms. Roberta Quadrelli had overall responsibility for this publication.

CO₂ emission estimates from 1960 to 2011 for the Annex II countries and from 1971 to 2011 for all

other countries are available on CD-ROM suitable for use on Windows-based systems. To order, please see the information provided at the end of this publication.

In addition, a data service is available on the Internet. It includes unlimited access through an annual subscription as well as the possibility to obtain data on a pay-per-view basis. Details are available at www.iea.org.

Enquiries about data or methodology should be addressed to:

Energy Data Centre – CO₂ emissions
Telephone: (+33-1) 40-57-66-01,
E-mail: emissions@iea.org.

1. This document is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. In this publication, “country” refers to a country or a territory, as the case may be.

2011 CO₂ EMISSIONS OVERVIEW

RECENT TRENDS IN CO₂ EMISSIONS FROM FUEL COMBUSTION

The growing importance of energy-related emissions

Climate scientists have observed that carbon dioxide (CO₂) concentrations in the atmosphere have been increasing significantly over the past century, compared to the rather steady level of the pre-industrial era (about 280 parts per million in volume, or ppmv). The 2012 concentration of CO₂ (394 ppmv) was about 40% higher than in the mid-1800s, with an average growth of 2 ppmv/year in the last ten years. Significant increases have also occurred in levels of methane (CH₄) and nitrous oxide (N₂O).

The *Fifth Assessment Report* from the Intergovernmental Panel on Climate Change (Working Group I) states that human influence on the climate system is clear (IPCC, 2013). Some impacts of the increased GHG concentrations may be slow to become apparent since stability is an inherent characteristic of the interacting climate, ecological and socio-economic systems. Even after stabilisation of the atmospheric concentration of CO₂, anthropogenic warming and sea level rise would continue for centuries due to the time scales associated with climate processes and feedbacks. Some changes in the climate system would be irreversible in the course of a human lifespan.

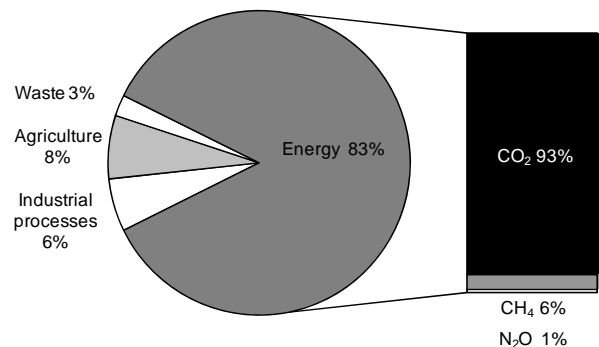
Given the long lifetime of CO₂ in the atmosphere, stabilising concentrations of greenhouse gases at any level would require large reductions of global CO₂ emissions from current levels. The lower the chosen level for stabilisation, the sooner the decline in global CO₂ emissions would need to begin, or the deeper the emission reduction would need to be over time. The United Nations Framework Convention on Climate Change (UNFCCC) provides a structure for inter-governmental efforts to tackle the challenge posed by climate change. The Convention's ultimate objective

is to stabilise GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The Conference of Parties (COP) further recognised that deep cuts in global GHG emissions are required, with a view to hold the increase in global average temperature below 2°C above preindustrial levels, and that Parties should take urgent action to meet this long-term goal, consistent with science and on the basis of equity.

Energy use and greenhouse gases

Among the many human activities that produce greenhouse gases, the use of energy represents by far the largest source of emissions. Smaller shares correspond to agriculture, producing mainly CH₄ and N₂O from domestic livestock and rice cultivation, and to industrial processes not related to energy, producing mainly fluorinated gases and N₂O (Figure 1).

Figure 1. Shares of anthropogenic GHG emissions in Annex I countries, 2011*



* Based on Annex I data for 2011; without Land Use, Land-Use Change and Forestry, and with Solvent Use included in Industrial Processes and "other" included with waste.

Source: UNFCCC.

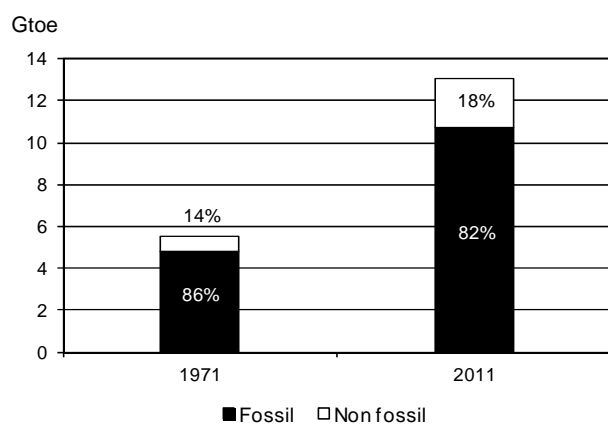
Key point: Energy emissions, mostly CO₂, account for the largest share of global GHG emissions.

Within the energy sector¹, CO₂ resulting from the oxidation of carbon in fuels during combustion dominates the total GHG emissions.

CO₂ from energy represents about three quarters of the anthropogenic GHG emissions for Annex I² countries, and over 60% of global emissions. This percentage varies greatly by country, due to diverse national structures.

Increasing demand for energy comes from worldwide economic growth and development. Global total primary energy supply (TPES) more than doubled between 1971 and 2011, mainly relying on fossil fuels (Figure 2).

Figure 2. World primary energy supply*



* World primary energy supply includes international bunkers.

Key point: Fossil fuels still account for most – over 80% – of the world energy supply.

Despite the growth of non-fossil energy (such as nuclear and hydropower), considered as non-emitting,³

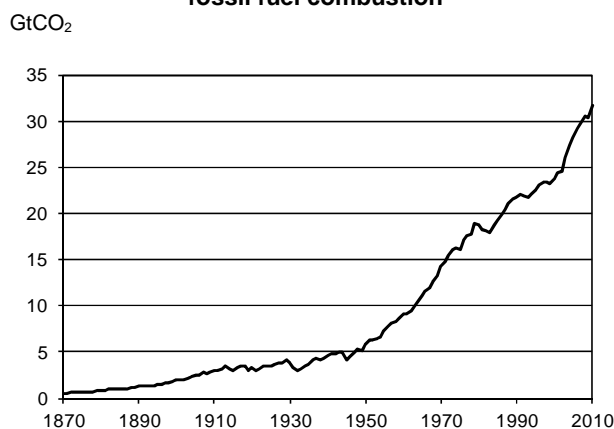
1. The energy sector includes emissions from “fuel combustion” (the large majority) and “fugitive emissions”, which are intentional or unintentional releases of gases resulting from production, processes, transmission, storage and use of fuels (e.g. CH₄ emissions from coal mining).

2. The Annex I Parties to the 1992 UN Framework Convention on Climate Change (UNFCCC) are: Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, the Czech Republic, Denmark, Estonia, European Economic Community, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, the Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom and United States. See www.unfccc.int. For country coverage of Annex I Economies in Transition (EIT) and Annex II, see Geographical Coverage.

3. Excluding the life cycle of all non-emitting sources and excluding combustion of biofuels (considered as non-emitting CO₂, based on the assumption that the released carbon will be reabsorbed by biomass regrowth, under balanced conditions).

the share of fossil fuels within the world energy supply is relatively unchanged over the past 40 years. In 2011, fossil sources accounted for 82% of the global TPES.

Figure 3. Trend in CO₂ emissions from fossil fuel combustion



Source: Carbon Dioxide Information Analysis Center, Oak Ridge National Laboratory, US Department of Energy, Oak Ridge, Tenn., United States.

Key point: Since 1870, CO₂ emissions from fuel combustion have risen exponentially.

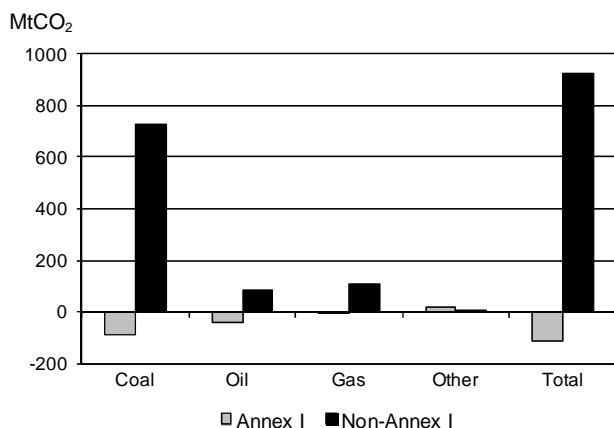
Growing world energy demand from fossil fuels plays a key role in the upward trend in CO₂ emissions (Figure 3). Since the Industrial Revolution, annual CO₂ emissions from fuel combustion dramatically increased from near zero to over 31 GtCO₂ in 2011.

The next section provides a brief overview of recent trends in energy-related CO₂ emissions, as well as in some of the socio-economic drivers of emissions.

Recent emissions trends

In 2011, global CO₂ emissions were 31.3 GtCO₂. In line with the average annual growth rate since 2000, emissions rose by 2.7% in one year, two percentage points less than in 2010, year of initial recovery after the financial crisis.

While emissions in non-Annex I countries continued to increase rapidly (5.8%), emissions in Annex I countries decreased by 0.8%. In absolute terms, global CO₂ emissions increased by 0.8 GtCO₂ in 2011, driven by the 0.7GtCO₂ increase of coal emissions in non-Annex I countries (Figure 4).

Figure 4. Change in CO₂ emissions (2010-11)

Key point: In 2011, coal drove a significant emissions increase in non-Annex I countries, while Annex I countries slightly decreased their emissions.

Early indications suggest that in 2012 CO₂ emissions continued to decline in the group of OECD countries, more than offset by a rapid increase in non-OECD countries. According to the same indications, total energy-related CO₂ emissions increased by about 1%.

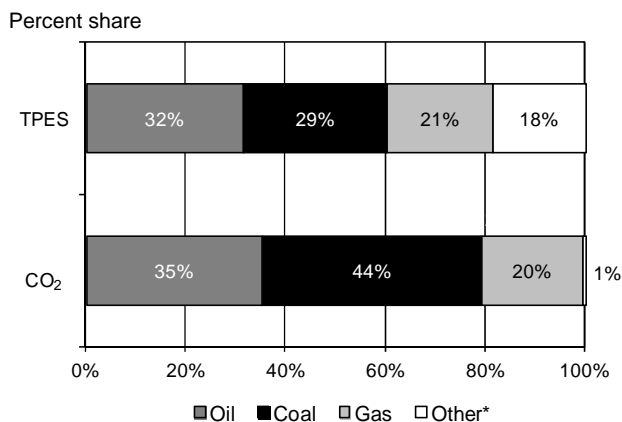
For the medium term, in its New Policies Scenario, the *World Energy Outlook (WEO 2013)*⁴ projects that global CO₂ emissions from fuel combustion continue to grow unabated, albeit at a lower rate, reaching 37.2 GtCO₂ by 2035. This is an improvement over the WEO Current Policies Scenario, but still leads to a long-term temperature increase of 3.6°C, well above the 2°C target agreed by the Parties to the UNFCCC.

Emissions by fuel

Although coal represented 29% of the world TPES in 2011, it accounted for 44% of the global CO₂ emissions due to its heavy carbon content per unit of energy released, and to the fact that 18% of the TPES derives from carbon-neutral fuels (Figure 5). As compared to gas, coal is nearly twice as emission intensive on average.⁵

4. Unless otherwise specified, projections from the *World Energy Outlook* refer to the New Policies Scenario from the 2013 edition. This scenario takes account of the broad policy commitments and plans that have been announced by countries around the world, including national pledges to reduce GHG emissions and plans to phase out fossil-energy subsidies – even where the measures to implement these commitments have yet to be identified or announced. These commitments are assumed to be implemented in a relatively cautious manner, reflecting their non-binding character and, in many cases, the uncertainty surrounding how they are to be put into effect.

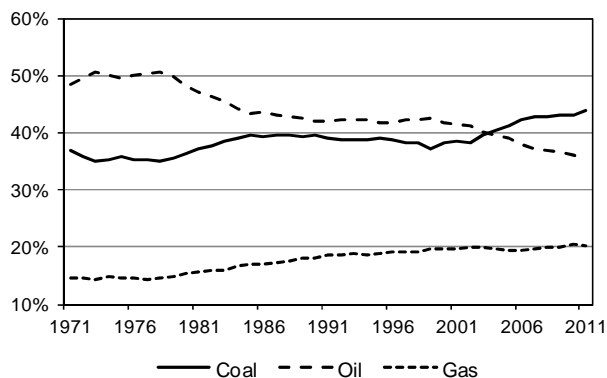
5. IPCC default carbon emission factors from the *1996 IPCC Guidelines*: 15.3 tC/TJ for gas, 16.8 to 27.5 tC/TJ for oil products, 25.8 to 29.1 tC/TJ for primary coal products.

Figure 5. World primary energy supply and CO₂ emissions: shares by fuel in 2011

* Other includes nuclear, hydro, geothermal, solar, tide, wind, biofuels and waste.

Key point: Globally, coal combustion generates the largest share of CO₂ emissions, although oil has the largest share in energy supply.

Those shares evolved significantly during the last decade, following ten years of rather stable relative contributions among fuels. In 2001 in fact, the largest emissions share was still due to oil (42%), several percentage points ahead of coal (Figure 6).

Figure 6. Fuel shares in global CO₂ emissions

Key point: The fossil fuel mix changed significantly in the last 10 years, with a rapid growth of coal as the largest source of CO₂ emissions.

In 2011, CO₂ emissions from the combustion of coal increased by 4.9% to 13.7 GtCO₂. Currently, coal fills much of the growing energy demand of those developing countries (such as China and India) where energy-intensive industrial production is growing rapidly and large coal reserves exist with limited reserves of other energy sources.

Without additional abatement measures, beyond those already adopted or under discussion, the *WEO 2013*

projects that emissions from coal will grow to 15.7 GtCO₂ in 2035. However, adopting a pathway towards limiting the long-term temperature increase to 2°C as in the *WEO 2013* 450 Scenario – through use of more efficient plants and end-use technologies as well as increased use of renewables, nuclear and carbon capture and storage (CCS) technologies – could see coal consumption drop and CO₂ emissions from coal reduced to 5.7 Gt by 2035.

CO₂ emissions from oil rose to 11.1 GtCO₂ in 2011, an increase of 0.6%. *WEO 2013* projects that emissions from oil will grow to 12.5 GtCO₂ in 2035, principally due to increased transport demand.

Emissions of CO₂ from gas were 6.3 GtCO₂ in 2011, 1.7% higher than in the previous year. Again, the *WEO 2013* projects emissions from gas will continue to grow, rising to 9.1 GtCO₂ in 2035.

Emissions by region

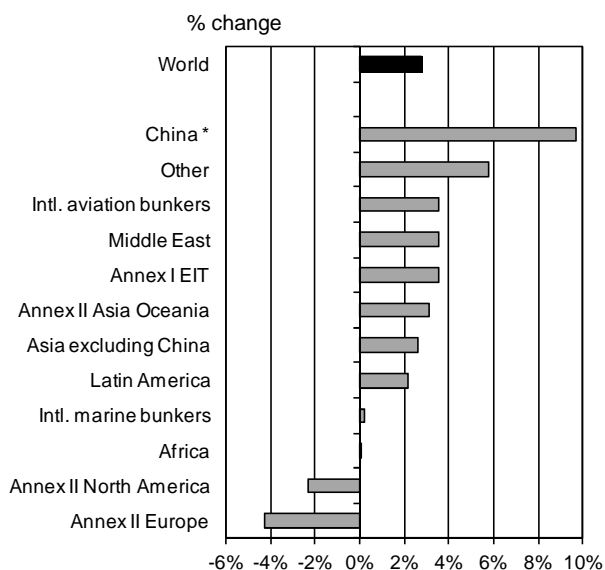
Non-Annex I countries, collectively, represented 54% of global CO₂ emissions in 2011. At the regional level, annual growth rates varied greatly: on the one hand, emissions in China grew strongly (9.7%), while on the other hand, emissions in Annex II countries decreased (-2.4% in North America and -4.3% in Europe). Other regions, like the Middle East, Annex II Asia Oceania, Asia and Latin America⁶, experienced moderate growth (2% to 4%), while emissions in Africa remained stable (Figure 7).

Regional differences in contributions to global emissions conceal even larger differences among individual countries. Nearly two-thirds of global emissions for 2011 originated from just ten countries, with the shares of China (25.4%) and the United States (16.9%) far surpassing those of all others. Combined, these two countries alone produced 13.2 GtCO₂. The top-10 emitting countries include five Annex I countries and five non-Annex I countries, with the entry in 2011 of Saudi Arabia displacing the United Kingdom from the group (Figure 8).

As different regions and countries have contrasting economic and social structures, the picture would change significantly when moving from absolute emissions to indicators such as emissions per capita or per GDP. A more comprehensive analysis is given in the section *Coupling emissions with socio-economic indicators* later in this chapter.

6. For the purposes of this discussion, Latin America includes non-OECD Americas and Chile.

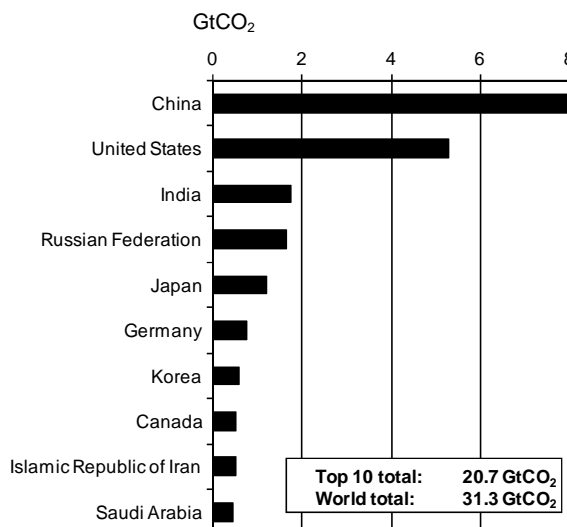
Figure 7. Change in CO₂ emissions by region (2010-11)



* China includes Hong Kong.

Key point: Annex II Europe and North America decreased their emissions in 2011; all other regions increased, with China showing the largest trend.

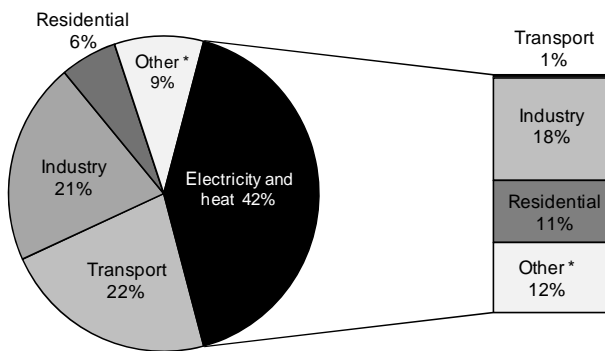
Figure 8. Top 10 emitting countries in 2011



Key point: The top 10 emitting countries account for two-thirds of the world CO₂ emissions.

Emissions by sector

Two sectors produced nearly two-thirds of global CO₂ emissions in 2011: electricity and heat generation, by far the largest, accounted for 42%, while transport accounted for 22% (Figure 9).

Figure 9. World CO₂ emissions by sector in 2011

Note: Also shows allocation of electricity and heat to end-use sectors.

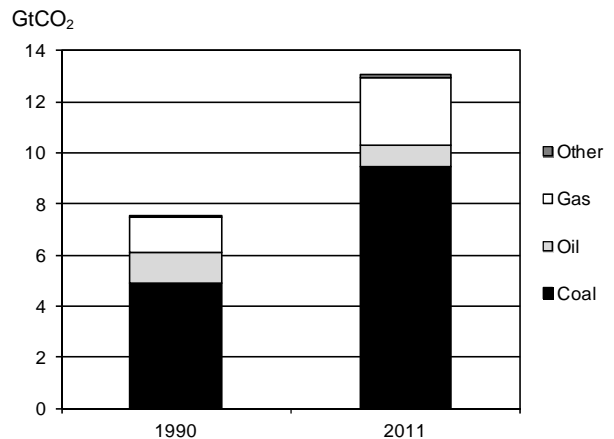
* Other includes commercial/public services, agriculture/forestry, fishing, energy industries other than electricity and heat generation, and other emissions not specified elsewhere.

Key point: Two sectors combined, generation of electricity and heat and transport, represented nearly two-thirds of global emissions in 2011.

Generation of electricity and heat worldwide relies heavily on coal, the most carbon-intensive fossil fuel. Countries such as Australia, China, India, Poland and South Africa produce over two-thirds of their electricity and heat through the combustion of coal.

Between 2010 and 2011, CO₂ emissions from electricity and heat increased by 4.4%, faster than total emissions. While the share of oil in electricity and heat emissions has declined steadily since 1990, the share of gas increased slightly, and the share of coal increased significantly, from 66% in 1990 to 72% in 2011 (Figure 10). Carbon intensity developments for this sector will strongly depend on the fuel mix used to generate electricity, including the share of non-emitting sources, such as renewables and nuclear, as well as on the potential penetration of CCS technologies.

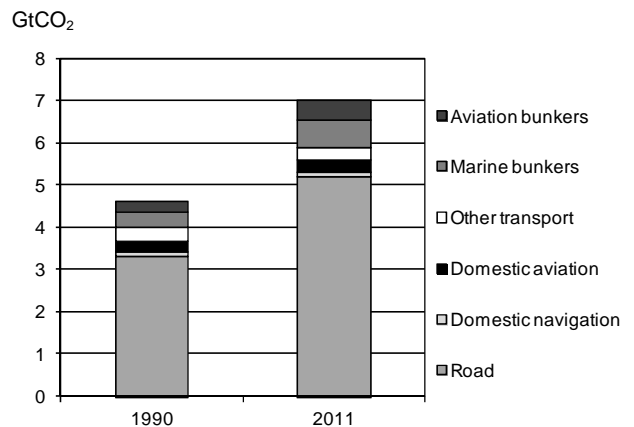
By 2035, the *WEO 2013* projects that demand for electricity will be almost 70% higher than current demand, driven by rapid growth in population and income in developing countries, by the continuing increase in the number of electrical devices used in homes and commercial buildings, and by the growth in electrically driven industrial processes. Meanwhile, renewables-based electricity generation is expected to continue growing over the next 25 years, benefiting from government support, declining investment costs and rising fossil-fuel prices. Under the three *WEO 2013* scenarios, the share of renewables in total electricity generation rises from 20% in 2011 to 25% (Current Policies), 31% (New Policies) and 48% (450 Scenario).

Figure 10. CO₂ emissions from electricity and heat generation*

* Refers to main activity producers and autoproducers of electricity and heat.

Key point: CO₂ emissions from electricity and heat almost doubled between 1990 and 2011, driven by the large increase of generation from coal.

As for transport, the fast emissions growth was driven by emissions from the road sector, which increased by 52% since 1990 and accounted for about three quarters of transport emissions in 2011 (Figure 11). It is interesting to note that despite efforts to limit emissions from international transport, emissions from marine and aviation bunkers, both about 80% higher in 2011 than in 1990, grew even faster than those from road.

Figure 11. CO₂ emissions from transport

Key point: CO₂ emissions from road are driving the growth of transport emissions.

Global demand for transport appears unlikely to decrease in the foreseeable future; the *WEO 2013* projects that transport fuel demand will grow by nearly 40% by 2035. To limit emissions from this sector, policy makers should implement measures to

encourage or require improved vehicle efficiency, as the United States has recently done and the European Union is currently doing as a follow-up to the voluntary agreements. Policies that encourage a shift from cars to public transportation and to lower-emission modes of transportation can also help. Finally, policies can encourage a shift to new, preferably low-carbon fuels. These include electricity (e.g. electric and plug-in hybrid vehicles), hydrogen (e.g. through the introduction of fuel cell vehicles) and greater use of biofuels (e.g. as a blend in gasoline and diesel fuel). To avoid a rebound in transport fuel demand, these moves must also be backed up by emissions pricing or fuel excise policies.

These policies would both reduce the environmental impact of transport and help to secure domestic fuel supplies, which are sometimes unsettled (e.g. by the threat of supply disruptions, whether from natural disasters, accidents or the geopolitics of oil trade). As these policies will ease demand growth, they could also help keep oil prices below the increases projected in a business-as-usual scenario.

Across all sectors, the opportunities of the “hidden” fuel of energy efficiency are many and rich. For example, the IEA⁷ shows that in 25 policy steps, countries could save USD 1 trillion in annual energy costs as well as deliver incalculable security benefits in terms of energy supply and environmental protection. Globally, apart from reducing both consumption and CO₂ emissions, energy efficiency could help countries maximise economic potential and social welfare and mitigate insecurity from stretched energy resources.

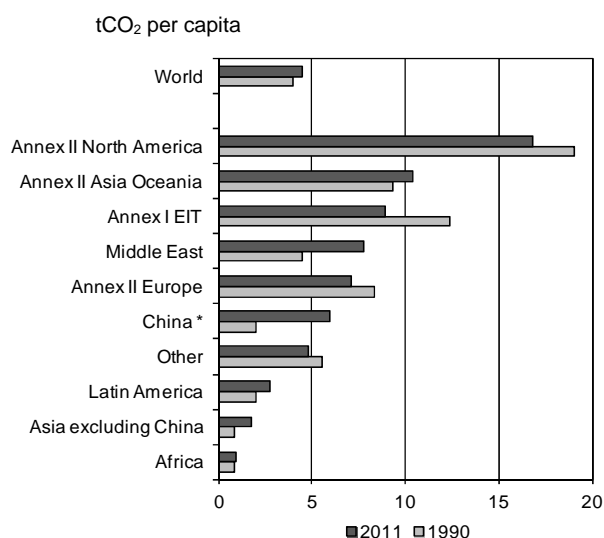
Coupling emissions with socio-economic indicators⁸

Indicators such as those briefly discussed in this section strongly reflect energy constraints and choices made to support the economic activities of each country. They also reflect sectors that predominate in different countries’ economies.

The range of per-capita emission levels across the world is very large, highlighting wide divergences in the way different countries and regions use energy (Figure 12). For example, among the five largest emitters, the levels of per-capita emissions were very diverse, ranging from 1 tCO₂ for India and 6 tCO₂ for

China to 17 tCO₂ for the United States. On average, industrialised countries emit far larger amounts of CO₂ per capita than developing countries. The lowest levels worldwide were those of the Asian and African region.

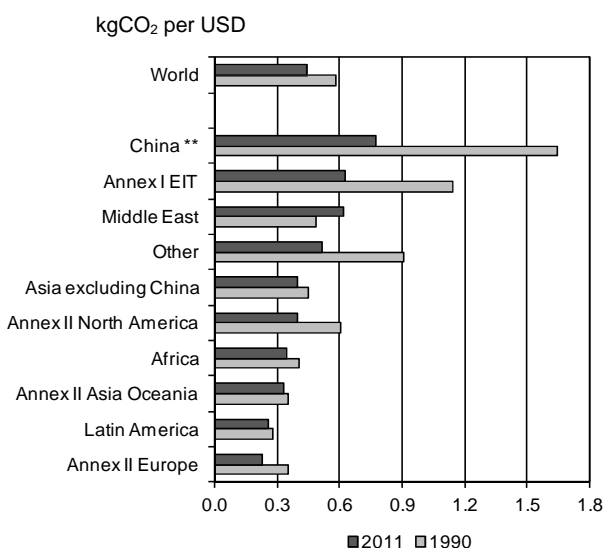
Figure 12. CO₂ emissions per capita by major world regions



* China includes Hong Kong.

Key point: Emissions per capita vary greatly around the world, with Annex II North America far ahead of other regions.

Figure 13. CO₂ emissions per GDP* by major world regions



* GDP in 2005 USD, using purchasing power parities.

** China includes Hong Kong.

Key point: Emission intensities in economic terms vary greatly around the world.

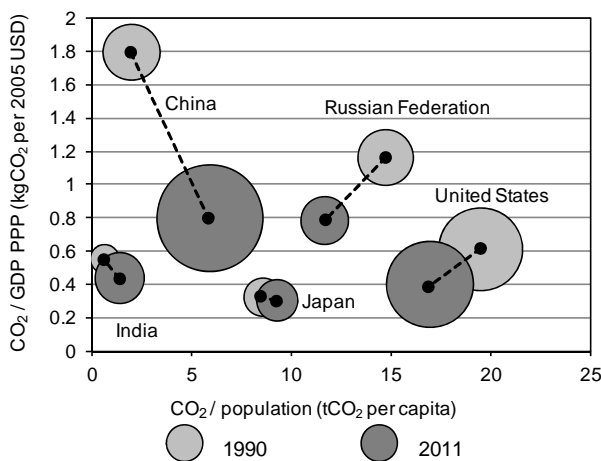
7. See 25 Energy Efficiency Policy Recommendations, IEA (2011) and World Energy Outlook, IEA (2012).

8. No single indicator can provide a complete picture of a country’s CO₂ emissions performance or its relative capacity to reduce emissions. The indicators discussed here are certainly incomplete and should only be used to provide a rough indication of the situation in a country.

Emissions per unit of GDP⁹ are also very variable across regions (Figure 13). Although climate, economic structure and other variables can affect energy use, relatively high values of emissions per GDP indicate a potential for decoupling CO₂ emissions from economic growth. Possible improvements can derive from fuel switching away from carbon-intensive sources or from energy efficiency at all stages of the energy value chain (from raw material extraction to energy end-use).¹⁰

All the five largest emitters have shown reductions of emissions per unit of GDP between 1990 and 2011, in line with the average reduction observed globally (23%). This decreasing trend was more pronounced for China and the Russian Federation, whose 1990 levels were significantly higher than those of other countries (Figure 14).

Figure 14. Trends in CO₂ emission intensities for the top five emitting countries*



* Size of circle represents total CO₂ emissions from the country in that year.

Key point: All top five emitters reduced their emissions per unit of GDP between 1990 and 2011, while emissions per capita showed contrasting trends.

Per-capita emissions, which increased by 14% globally between 1990 and 2011, showed instead contrasting

9. Throughout this analysis, GDP refers to GDP in 2005 USD, using purchasing power parities. A note of caution is necessary concerning the indicator of CO₂ emissions per GDP. It can be very useful to measure efforts over time for one country, but has limitations when comparing countries, as it is very sensitive to the base year used for the GDP purchasing power parity (PPP).

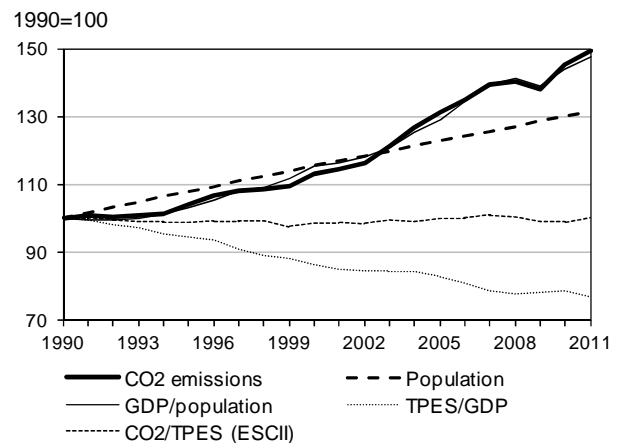
10. The IEA's Policies and Measures Databases offer access to information on energy-related policies and measures taken or planned to reduce GHG emissions, improve energy efficiency and support renewable energy development and deployment. The online databases can be consulted at: www.iea.org/policiesandmeasures/.

trends among the top five emitting countries. For example, China increased its per-capita emissions by three times and India doubled them, as did some other rapidly expanding economies. Conversely, per-capita emissions decreased significantly in both the Russian Federation (21%) and the United States (13%), although following very different patterns. Values for Russia dramatically dropped in the early nineties, and have progressively recovered in more recent years, while values for the United States decreased with the financial crisis starting in 2008, after many years of rather stable behaviour.

On a global level, CO₂ emissions grew by almost 50% between 1990 and 2011. A simple four factor decomposition¹¹ shows the main driving factors of the world CO₂ emissions trend. Globally, the economic growth partially decoupled from energy use, as energy intensity decreased by 23% over the period. However, with a practically unchanged carbon intensity of the energy mix¹², the combined growth in population (32%) and in per capita GDP (48%) led to a dramatic increase in global CO₂ emissions between 1990 and 2011.

Such behaviour varies greatly among countries and regions. Understanding the factors driving CO₂ emissions trends will be essential to designing sound and effective policies aiming at emissions reductions.

Figure 15. Global CO₂ emissions and drivers (Kaya decomposition)



Key point: Despite some decoupling between economic growth and energy use, increasing wealth and population, with an unchanged carbon intensity of the mix, drove dramatic CO₂ emissions increases.

11. CO₂ emissions can be decomposed into the product of four factors: population, per capita GDP, TPES/GDP, CO₂/TPES. For a more detailed description of the Kaya decomposition, see Part I, Methodology, Chapter 1: *IEA emissions estimates*.

12. Also known, in its index form, as Energy Sector Carbon Intensity Index (ESCII), as in the IEA publication *Tracking Clean Energy Progress 2013*.

Using biofuels to reduce transport emissions

Compatible with most conventional automotive engines (in low-percentage blends), blendable with current transport fuels, and marketable using much of the current fuel distribution and retail infrastructure, biofuels have the potential to reduce GHG emissions and to contribute to energy security by diversifying supply sources for transport. However, the economic, environmental and social benefits of the current generation of biofuels vary.

In order to assess their efficacy in reducing GHG emissions, biofuels can be compared on the basis of their well-to-wheel (WTW)* performance with respect to conventional fossil fuels. When ethanol is derived from corn, the WTW greenhouse-gas reduction with respect to conventional gasoline is typically in the range of 10% to 50%. The reduction is typically much higher for sugarcane-based ethanol from Brazil, reaching an estimated 70% to 120%**. Similarly, oilseed-derived biodiesel typically leads to GHG reductions, on a WTW basis, of 30% to 60% when compared to conventional petroleum diesel.

However, these comparisons do not take into account the possibility that changes in land use caused by biofuel production can result in one-time releases of CO₂ that could be quite large; more research is needed on the impacts of both direct and indirect land-use change, and how to minimise adverse impacts.

New and emerging biofuel technologies, which can use as feedstock biomass residues and energy crops such as fast-growing trees and perennial grasses, have the potential to expand the scope for production of very low-carbon biofuels. However, these biofuel technologies are not yet commercially operational at full scale. The most mature of these technologies are currently starting to be produced in first commercial plants.

For both conventional and advanced biofuels, production cost is a main barrier to their larger penetration in the transport fuel mix. Ethanol from sugarcane produced in Brazil has been more or less the only biofuel competitive with petroleum fuels without direct subsidies, although this has changed at times when high sugar prices pushed up production costs for ethanol beyond a level competitive with regulated gasoline prices.

Currently, more than 50 countries have mandated or promoted biofuel blending to displace oil in domestic

transport supply. In Brazil, gasoline contains 20% to 25% ethanol, and around 95% of new car sales in Brazil in 2011 were flex-fuel vehicles that can run on a gasoline/ethanol blend from 20% to up to 100% ethanol in the fuel mix. This allows the driver to choose the cheapest fuel at the pump.

In 2007, the United States introduced the Renewable Fuels Standard 2, which sets out blending mandates for different types of biofuels. The total mandated volume stands at 15.2 billion gallons in 2012 and will increase to 36 billion gallons by 2022 (of which more than half will be required to be “advanced biofuels”*** and about one-third cellulosic ethanol****).

In the European Union, the Renewable Energy Directive sets out a mandatory share of 10% renewable energy in transport by 2020. While the overall target remains in place, a recent draft proposal from the European Parliament suggests to limit the use of conventional biofuels to 6% and to introduce a 2.5% quota for advanced biofuels. The directive requires for all biofuels that are counted towards the target to meet mandatory sustainability criteria, including minimum GHG emission savings compared to fossil fuels. The use of biofuels produced from certain types of wastes, and residues is counted twice against the targets. Australia (New South Wales and Queensland) and Canada are also mandating the use of biofuels, as are a number of non-OECD countries.

In the future, it is crucial that policies foster innovation and support only sustainable biofuels that can provide considerable emission reductions compared to the use of fossil gasoline and diesel. Continuous monitoring of the environmental, social and economic impacts of biofuel production and use will be important. This includes analysis of suitable land for biofuel cultivation and the potential influence of biofuel production on global food prices taking account of global demand for food, fibre and energy for a steadily growing world population. Support measures should be phased out over time as the commercial viability of biofuels improves as technologies evolve and prices of conventional fossil fuels increase. If well-managed and co-ordinated with investments in infrastructures and agriculture, biofuels can provide an opportunity for increasing land productivity and creating economic development, particularly in rural areas of developing countries.

* Well-to-wheel life cycle analysis refers to the total emissions from the production stage to the consumption stage of the product.

** GHG savings of more than 100% are possible through use of co-products

*** Advanced biofuels in the US Renewable Fuels Standard refer to biofuels that provide more than 50% life-cycle CO₂ savings compared with gasoline.

**** Cellulose is an organic compound with the formula C₆H₁₀O₅ and is the structural component of the primary cell wall of green plants. Lignocellulosic biomass refers to plant biomass that is composed of cellulose, hemicellulose and lignin.

Developing a low-carbon world

Traditionally, industrialised countries have emitted the large majority of anthropogenic greenhouse gases (GHGs). More recently, however, shares of developing country emissions surpassed those of industrialised countries, and have kept rising very rapidly. To shift towards a low-carbon world, mitigation measures now taking shape within industrialised countries will need to be accelerated, and complemented by comprehensive efforts worldwide.

A breakthrough in this effort was the agreement at the United Nations Framework Convention on Climate Change (UNFCCC) 17th Conference of the Parties (COP17) talks in Durban (December 2011) to “launch a process to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties”. The goal is to negotiate the new agreement by 2015, and for it to come into force from 2020. If agreement can be reached, this will be the first international climate agreement to extend mitigation obligations to all countries, both developed and developing. To build political momentum towards a 2015 agreement, the Secretary-General of the United Nations Ban Ki-moon will invite world leaders to a summit in September 2014.

The Durban agreement builds on decisions at the two previous UNFCCC meetings (in Copenhagen and Cancún), which invited developing countries to put forward voluntary mitigation pledges, which in turn built on the earlier Bali Roadmap (from 2007) that encouraged voluntary mitigation actions in developing countries. Developed and developing countries that submitted pledges under the Copenhagen Accord collectively account for over 80% of global emissions. Although the ambition of these pledges is currently insufficient to limit temperature rise to 2°C above pre-industrial levels, the breadth of participation in mitigation commitments marks a significant improvement on the previous climate agreement, the Kyoto Protocol of the UNFCCC.

The Kyoto Protocol commits industrialised countries (as a group) to curb domestic emissions by about 5% relative to 1990 by the 2008-12 first commitment period. Alongside the agreement to negotiate a new climate agreement by 2015, 38 countries have agreed to take commitments under a second commitment period of the Kyoto Protocol to begin in 2013. The amendments

to the Kyoto Protocol bringing the second commitment period into force require ratification by two-thirds of countries participating in the Protocol, a process that is not yet complete.

The Kyoto Protocol also creates “flexible mechanisms” by which industrialised countries can transfer emission allowances among themselves and earn emission credits from emissions reduction projects in participating developing countries and economies in transition (EITs). Despite its extensive coverage (192 countries), the Protocol is limited in its potential to address global emissions since not all major emitters are included in reduction commitments. The United States remains outside of the Protocol’s jurisdiction and though most developing countries (*i.e.* non-Annex I countries) have signed, they do not face emissions targets. The Kyoto Protocol implies action on only one-quarter of global CO₂ emissions, as measured in 2010.

Through its flexibility mechanisms and provisions for international trading, the Kyoto Protocol has made CO₂ a tradable commodity, and has been a key driver for the development of emissions trading schemes as detailed below. In 2011 the total value of the global carbon market was USD 176 billion, with 10.3 billion allowances traded (World Bank, 2012).

Emissions trading schemes

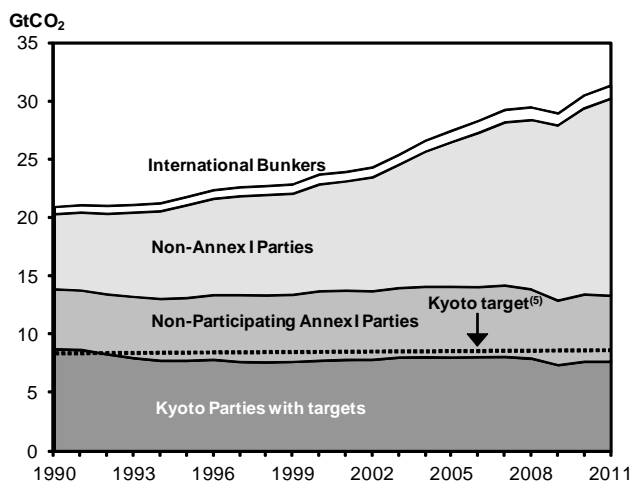
Emissions trading schemes (ETS) are developing or being proposed in several regions and countries around the world. Some are operational or being launched (EU ETS, Australia, New Zealand, Norway, Tokyo, Switzerland, in California and through the Regional Greenhouse Gas Initiative in the United States, and in the Canadian provinces of Alberta and Quebec) while others are under development (Korea, China, Kazakhstan, Ukraine and Chile).

An important milestone in 2013 was the start of trading in Shenzhen, the first of China’s seven pilot emissions trading schemes. China has also announced the intention to establish a nationwide ETS after 2016, informed by these pilots. Further pilots will be launched in late 2013 and early 2014 in four other cities (Beijing, Tianjin, Chongqing, and Shanghai) and two provinces (Hubei and Guangdong). Together, these pilots are expected to cover 700Mt of CO₂ emissions (Scotney et al, 2012).

Also in 2013, Kazakhstan launched a trial phase of its ETS, covering 178 companies in the energy and industrial sectors.

Table 1. World CO₂ emissions from fuel combustion and Kyoto Protocol targets⁽¹⁾

	1990 MtCO ₂	2011 MtCO ₂	% change 90-11	Kyoto Target		1990 MtCO ₂	2011 MtCO ₂	% change 90-11	Kyoto Target
KYOTO PARTIES WITH TARGETS	8,778.3	7,713.5	-12.1%	-4.7%⁽¹⁾	OTHER COUNTRIES	11,591.7	22,515.2	94.2%	
<i>North America</i>	428.2	529.8	23.7%		<i>Non-participating</i>				
Canada ⁽²⁾	428.2	529.8	23.7%	-6%	<i>Annex I Parties</i>	5,122.3	5,641.4	10.1%	
<i>Europe</i>	3,154.1	2,932.8	-7.0%		Belarus	124.4	66.0	-46.9%	none
Austria	56.4	68.5	21.4%	-13%	Malta	2.3	2.5	8.2%	none
Belgium	107.9	108.6	0.6%	-7.5%	Turkey	126.9	285.7	125.1%	none
Denmark	50.6	41.7	-17.7%	-21%	United States	4,868.7	5,287.2	8.6%	-7%
Finland	54.4	55.6	2.2%	0%	<i>Other Regions</i>	6,357.6	16,698.1	162.6%	none
France ⁽³⁾	352.6	328.3	-6.9%	0%	Africa	544.5	967.8	77.7%	none
Germany	949.7	747.6	-21.3%	-21%	Middle East	555.7	1,606.9	189.1%	none
Greece	70.1	83.6	19.3%	+25%	N-OECD Eur. & Eurasia ⁽⁴⁾	629.7	533.1	-15.3%	none
Iceland	1.9	1.9	-1.7%	+10%	Latin America ⁽⁴⁾	842.1	1,519.1	80.4%	none
Ireland	30.5	34.9	14.6%	+13%	Asia (excl. China) ⁽⁴⁾	1,507.9	4,071.8	170.0%	none
Italy	397.4	393.0	-1.1%	-6.5%	China	2,277.7	7,999.6	251.2%	none
Luxembourg	10.4	10.4	0.7%	-28%					
Netherlands	155.8	174.5	12.0%	-6%	INTL. MARINE BUNKERS	362.3	645.1	78.1%	
Norway	28.3	38.1	34.7%	+1%	INTL. AVIATION BUNKERS	256.4	468.5	82.7%	
Portugal	39.3	48.1	22.4%	+27%					
Spain	205.2	270.3	31.7%	+15%	WORLD	20,988.7	31,342.3	49.3%	
Sweden	52.8	44.9	-14.9%	+4%					
Switzerland	41.6	39.9	-4.2%	-8%					
United Kingdom	549.3	443.0	-19.3%	-12.5%					
<i>Asia Oceania</i>	1,343.9	1,613.1	20.0%						
Australia	260.0	396.8	52.6%	+8%					
Japan	1,061.6	1,186.0	11.7%	-6%					
New Zealand	22.3	30.3	35.8%	0%					
<i>Economies in Transition</i>	3,852.2	2,637.7	-31.5%						
Bulgaria	74.9	49.2	-34.3%	-8%					
Croatia	21.5	18.8	-12.7%	-5%					
Czech Republic	155.1	112.7	-27.4%	-8%					
Estonia	36.1	19.3	-46.5%	-8%					
Hungary	66.4	47.4	-28.6%	-6%					
Latvia	18.6	7.6	-59.3%	-8%					
Lithuania	33.1	13.2	-60.1%	-8%					
Poland	342.1	300.0	-12.3%	-6%					
Romania	167.5	81.8	-51.2%	-8%					
Russian Federation	2,178.8	1,653.2	-24.1%	0%					
Slovak Republic	56.7	33.9	-40.3%	-8%					
Slovenia	13.3	15.3	14.4%	-8%					
Ukraine	687.9	285.4	-58.5%	0%					



(1) The targets apply to a basket of six greenhouse gases and allow sinks and international credits to be used for compliance with the target. The overall EU-15 target under the Protocol is 8%, but the member countries have agreed on a burden-sharing arrangement as listed. Because of lack of data and information on base years and gases, an overall "Kyoto target" cannot be precisely calculated for total Kyoto Parties: estimates applying the targets to IEA energy data suggest the target is equivalent to about 4.7% on an aggregate basis for CO₂ emissions from fuel combustion.

(2) On 15 December 2011, Canada withdrew from the Kyoto Protocol. This action became effective for Canada on 15 December 2012.

(3) Emissions from Monaco are included with France.

(4) Composition of regions differs from elsewhere in this publication to take into account countries that are not Kyoto Parties.

(5) The Kyoto target is calculated as percentage of the 1990 CO₂ emissions from fuel combustion only, therefore it does not represent the total target for the six-gas basket. This assumes that the reduction targets are spread equally across all gases.

Key point: The existing climate targets under the Kyoto Protocol are not sufficiently comprehensive to lead to reductions in global CO₂ emissions from fuel combustion.

Another milestone in 2013 was the start of trading in the California and Quebec schemes. Rules for these were developed co-operatively under the umbrella of the Western Climate Initiative, an agreement among US states and Canadian provinces to promote a common platform for emissions trading. The California and Quebec systems both started trading in January 2013, and will formally link and hold joint auctions of allowances from 2014, pending final approval. The California system will play a critical role in reducing California's emissions to 1990 levels by 2020, as required under the Global Warming Solutions Act of 2006 (AB 32). The California ETS covers large stationary energy and industrial sources from 2013, and expands to cover natural gas and transport fuel suppliers from 2015.

The Australian ETS started in July 2012 with a fixed-price transitional phase, and will move to full trading in 2015.

The Australian government and European Union had announced intentions to link their systems, starting with one-way trading of European allowances into the Australian market from 2015, followed by full two-way linking from 2018. However a change of government in Australia in September 2013 has cast the plans into doubt, with the incoming government intending to repeal the ETS legislation.

The largest scheme in operation is the EU ETS, which began in 2005 and covers emitters in the energy, industry and aviation sectors, representing about 45% of the energy-related CO₂ emissions of the region. The system covers the 28 member states of the European Union, plus Norway, Liechtenstein, and Iceland. The lessons from its first two phases have helped to shape the scheme's post-2012 design (Ellerman *et al.*, 2010).

In December 2008, the European Council and the European Parliament endorsed an agreement on a climate change and energy package which implements a political commitment by the European Union to reduce its GHG emissions by 20% by 2020 compared to 1990 levels.¹³ The package also includes a target for renewables in the European Union, set at 20% of final energy demand by 2020.

The EU ETS will play a key role in achieving this target. The 2020 emissions cap for ETS installations is 21% below the actual level of 2005 emissions,¹⁴ with the option to lower the cap to 34% below 2005 levels if there is ambitious climate action internationally.

These targets were set in 2008, before the scale of the global financial crisis was apparent. Due to the economic slow-down, European GHG emissions have decreased to the point where the 21% target is expected to be achieved without any abatement effort from industry. As a result, allowance prices in the EU ETS have dropped substantially, and prompted a process of short and long-term reform. In May 2013, the European Parliament agreed to the temporary withholding of 900 Mt of allowances from auction. This will reduce oversupply while options are considered for longer-term measures to restore the supply-demand balance. A proposal for this reform is expected in late 2014.

In New Zealand, a comprehensive economy-wide emission trading scheme (NZ ETS) is being progressively introduced. It began with the forestry sector in January 2008; the energy, transport and industrial sectors have been included since July 2010. Waste and agricultural emissions will enter by 2015. A transition phase, from 2010 to 2015, is based on a capped price and partial obligations. The scheme is fully linked to the international Kyoto market, and allows unlimited use of Kyoto Protocol project and forestry credits. No emissions cap is specified: linking to the international market is intended rather to ensure that an appropriate carbon price is set in the New Zealand economy.

Several other ETS schemes are operating, including in countries that are not Parties to the Kyoto Protocol. In the United States, the first regional scheme (the Regional Greenhouse Gas Initiative [RGGI] covering the electricity sector in the northeastern states) began on 1 January 2009. In February 2013, the RGGI states agreed to lower the emissions cap for 2014 from 165 million to 91 million short tons of CO₂, to bring it in line with 2012 actual emissions level. This 45% reduction was necessary as the previous cap did not anticipate the economic recession or the rapid shift from coal to shale gas for United States electricity generation.

Small schemes are also in place in Tokyo (covering commercial sites) and Alberta (covering large emitters). Switzerland's ETS allows companies to manage their emissions through trading instead of facing the country's carbon tax. Switzerland is in negotiations to link its scheme to the EU ETS. The Korean government has passed legislation to establish an emissions trading scheme from 2015, to assist in delivering Korea's target of a 30% improvement on business-as-usual (BAU) emissions by 2020.

An important development in extending emissions trading to developing economies has been the World Bank's Partnership for Market Readiness, which provides funding and technical assistance to developing countries for capacity building toward the development and piloting of market-based instruments for

13. A 30% reduction target is proposed if other Parties were to take equally ambitious mitigation objectives.

14. Annual cap: 1 974 Mt in 2013, falling in linear fashion to 1 720 Mt by 2020; average annual cap over 2013-20: 1 846 Mt (compared to an annual cap of 2 083 Mt for the period 2008-12).

GHG reduction. Brazil, Chile, China, Columbia, Costa Rica, India, Indonesia, Mexico, Morocco, Peru, South Africa, Thailand, Turkey, Ukraine and Vietnam are currently participating as implementing countries.

Steps for future action

After the unprecedented move at COP15 and COP/MOP5 in Copenhagen, where heads of states and high-level representatives failed to negotiate a comprehensive accord and settled for the Copenhagen Accord, COP16 and COP/MOP6 in Cancún were widely seen as having revitalized the international negotiating process. In Cancún, the key elements of the Copenhagen Accord were formally adopted into the UN process, including: the goal of limiting global temperature increase to less than 2°C above pre-industrial levels; commitments for the provision of financial resources; and sketching a framework for monitoring and reviewing mitigation actions and commitments. Annex I Parties submitted quantified economy-wide GHG targets to 2020 as part of the accord, and several non-Annex I countries also listed mitigation actions, or sectoral or economy-wide GHG targets. With the agreement at COP17 in Durban to launch negotiations on a new global agreement, the focus of the UNFCCC negotiations is now very much on the roadmap to 2015, coupled with decisions on extending the Kyoto Protocol to a second commitment period. The details of this second period were agreed in Doha at COP18, leaving the way clear to negotiate toward the new agreement. COP19, held in November 2013 in Warsaw, will represent an essential step towards such agreement.

A key challenge in defining this new agreement is that while obligations are to start from 2020, global emissions need to peak before 2020 if temperature rise is to be limited to below 2°C. This points to the need for an ambitious start point in 2020, but also the importance of complementary initiatives outside the UNFCCC that can constrain emissions in the period up to 2020. In addition to defining a framework for mitigation actions across developed and developing countries, the Durban Platform will cover enhanced actions on adaptation, technology development and on the provision of financial resources. The concept of both mitigation actions and financial flows being “measurable, reportable and verifiable” is now central to the establishment of a post-2015 framework for climate action. The next step in the UNFCCC process is COP19 in Warsaw, where the elements of the new agreement will be discussed.

Alongside the UNFCCC process, progress toward a low-carbon future is being made in numerous other fora. The challenge of post-2012 discussions is the need to engage developing countries with approaches, possibly including the carbon market, that suit their

capacity and their legitimate aspiration for economic and social development. The Asia Pacific Partnership for Clean Development and Climate (APP or AP7), the G8 2005 Gleneagles Plan of Action, and the Major Economies Forum on Energy and Climate (MEF) and Clean Energy Ministerial (CEM) processes have sought to involve developed and developing nations in common measures to address climate change. Other international fora gathering both developed and developing countries have emerged that can further mitigate efforts in specific areas, such as the International Renewable Energy Agency (IRENA), and the International Partnership for Energy Efficiency Co-operation (IPEEC).

The AP7, which groups Australia, Canada, China, India, Japan, Korea and the United States, focuses on the emissions of specific sectors (iron and steel, cement, aluminium, mining, buildings and appliances) and methods of clean fossil energy use, renewable energy generation and more efficient power generation and transmission.

Canada, France, Germany, Italy, Japan, the Russian Federation, the United Kingdom and the United States launched the July 2005 G8 Gleneagles Plan of Action to, in part, promote clean energy and sustainable development while mitigating climate change. The IEA was tasked under the Plan of Action to develop concrete recommendations to help the G8 achieve its clean energy objectives. Additionally, the G8 sought to engage South Africa, India, Brazil, China and Mexico in an official dialogue to address climate change, clean energy and sustainable development worldwide. This commitment by the G8 has been reiterated at subsequent summits.

The G20 summits have also served as a forum to advance climate change and clean energy discussions, including a commitment to rationalising and phasing out inefficient fossil fuel subsidies over the medium term. In 2011, the G20 formed a new Clean Energy and Energy Efficiency (C3E) Working Group to advance its work in this area. The Clean Energy Ministerial process, launched in 2009, is a high-level global forum to accelerate deployment of clean energy, through sharing experience in policies and programmes. It is based on a series of concrete initiatives to advance key technologies. The IEA is involved in some of these initiatives and also prepares an annual tracking report on global clean energy deployment for the CEM meeting.

In all these efforts, timely and accurate CO₂ and other GHG statistics will prove central to ascertaining compliance with international agreements and to informing policy makers and carbon market participants. The ability of countries to monitor and review emissions from their sources is essential in their engagement towards national and global GHG mitigation.

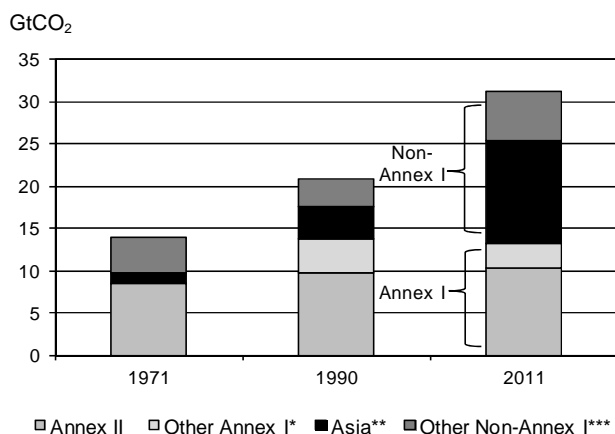
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REGIONAL ASPECTS OF THE ENERGY-CLIMATE CHALLENGE

Between 1971 and 2011, global CO₂ emissions more than doubled, with a brief dip in 2009. However, two important turning points occurred in 2008: for the first time, emissions from non-Annex I countries surpassed those in Annex I, and the emission levels of Annex I countries fell below 1990 levels due to the combined impact of the economic recession and high oil prices.

Figure 16. Trends in regional CO₂ emissions



* Other Annex I includes Annex I EIT, Malta and Turkey.

** Asia includes Korea and excludes Japan (which is included in Annex II).

*** Other non-Annex I includes Africa, Latin America, Middle East, non-Annex I, non-OECD Europe and Eurasia, international bunkers, and, for 1971, Other Annex I.

Key point: In 2011, CO₂ emissions from Annex I countries as a whole were below 1990 levels, while emissions from non-Annex I countries grew significantly.

The share of Annex I countries in global CO₂ emissions progressively shrank (66% in 1990 and 43% in 2011), as emissions in developing countries (led by Asia) increased at a much faster rate. The growth in Asian emissions reflects a striking rate of economic development, particularly within China and India.

Between 1990 and 2011, CO₂ emissions rose by over 2.5 times for non-Annex I countries as a whole and tripled for Asia. This is in contrast to the reduction in emissions below 1990 levels that occurred in the Annex I countries (emissions in 2011 were 3.9% lower than in 1990).

Emission trends within Annex I countries were very different. While in Annex II countries emissions of CO₂ were 6% higher in 2011 than in 1990, in Annex I EIT countries, they were 32% lower due to the rapid decline in industrial productivity that followed the collapse of their centrally planned economies in 1989.

As most of the recent emissions increase is observed in non-Annex I countries, this chapter examines how growing demand in some rapidly expanding economies – defined BRICS as a group – have dramatically changed emissions trends.

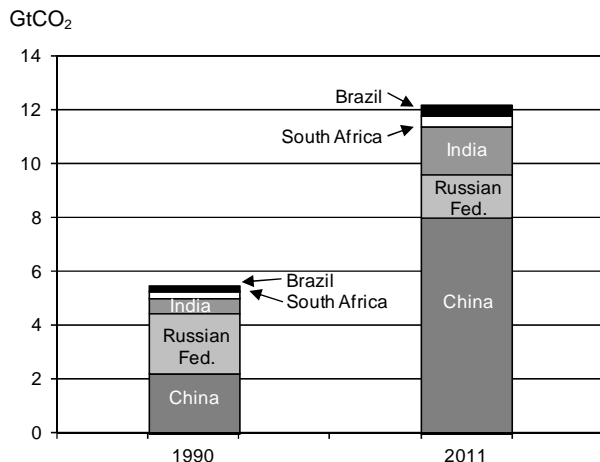
BRICS countries altering the regional balance

One of the most important recent developments in the world economy is the increasing economic integration of large non-OECD countries, in particular Brazil, the Russian Federation, India, China and South Africa, the so-called BRICS countries. In 2011, the BRICS represented over one-quarter of world GDP¹⁵, up from 15% in 1990. Also in 2011, these five countries represented 35% of global energy use and 39% of CO₂ emissions from fuel combustion, with varying individual contributions (Figure 17). These shares are

15. Throughout this analysis, GDP refers to GDP in 2005 USD, using purchasing power parities.

likely to rise further in coming years if the strong economic performance currently occurring in most of these countries continues, as many commentators expect. In fact, China, the Russian Federation and India are already three of the four countries that emit the most CO₂ emissions in absolute terms.

Figure 17. The growing importance of GHG emissions in the BRICS countries



Key point: With the exception of the Russian Federation, CO₂ emissions from the BRICS countries are increasing at a very fast pace.

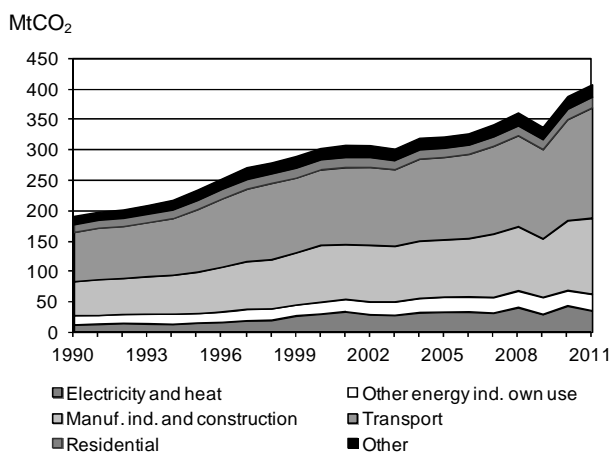
This brief discussion focuses on the BRICS countries, of which only the Russian Federation is a member of Annex I Parties to the UNFCCC. Each of these countries has very different natural resources, energy supply constraints and sectoral consumption patterns. Consequently, the issues relating to CO₂ emissions facing these five countries are quite different.

Brazil

Brazil is the sixth-largest emitter of total greenhouse gases in the world, with the particularity that the country's energy system has a relatively minor impact on GHG emissions (about 27%). The bulk of Brazilian GHG emissions come from agriculture, land-use and forestry activities, mainly through the expansion of agricultural frontiers in the Amazon region.

Compared to the Russian Federation, China and India, CO₂ emissions from fuel combustion in Brazil are small, representing only 1.3% of global CO₂ emissions from fuel combustion. Brazil's energy matrix is one of the cleanest in the world with renewables accounting for 43% of TPES. Within the energy sector, the sub-sectors that contribute the most to emissions – transport (45% in 2011, despite large consumption of biofuels) and industry (31%) – are those likely to grow the most over the next years (Figure 18).

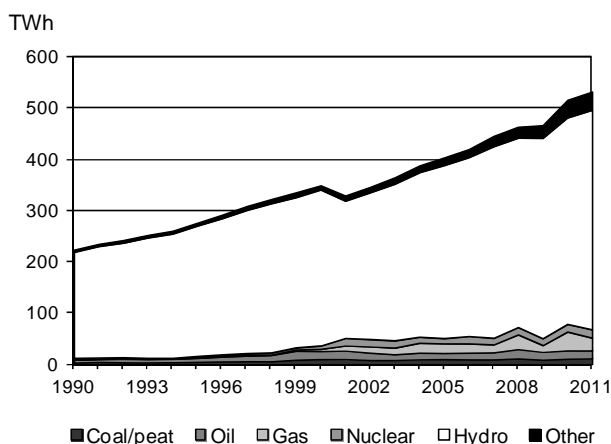
Figure 18. Brazil: CO₂ emissions by sector



Key point: The transport sector produces the largest share of CO₂ emissions from fuel combustion in Brazil.

Electricity generation in Brazil relies heavily on hydropower (Figure 19). Over the last three decades, the number of major dams has grown steadily and hydropower accounted for 81% of total electricity generation in 2011. Many of Brazil's hydropower generating facilities are located far away from the main demand centres, resulting in high transmission and distribution losses. Droughts in recent years have led to a wider diversification in the electricity production mix, also comprising solid biofuels (6%), natural gas (5%) and nuclear (3%) among other sources.

Figure 19. Brazil: Electricity generation by fuel



Key point: Brazilian electricity generation draws heavily on hydropower.

In 2009, the Brazilian government announced plans to build two new large hydroelectric plants. As a result, there are currently 22 GW of hydropower capacity

already contracted and under construction (including the 11.2 GW of the Belo Monte) plus 3.9 GW of small hydro plants. However, large hydro projects are frequently faced with opposition by environmental groups and indigenous communities, leading to legal disputes, project delays and higher project costs. The Brazilian power sector has developed the ‘platform hydro power concept’ to overcome these challenges: inspired by the functioning of offshore platforms for oil and gas, it helps prevent the development of nearby permanent settlements for workers and families, reducing the impact of new hydro plants.

In 2007, amid concerns about the risk of power-supply shortages beyond 2012 unless Brazil builds new capacity, the Brazilian government announced the development of five new nuclear power plants. The government's 2030 National Energy Plan, which dates from 2008 and is currently being updated, anticipates 5.3 GW of additional installed generation capacity from new nuclear plants (Angra 3 and four other plants) by 2030. However, after the Fukushima accident, the Brazilian government decided not to include the latter four plants in its 10-year power expansion plan 2012-20. Moreover, electricity produced from co-generation plants (mainly from sugarcane bagasse) is planned to constitute 11% of the country's electricity supply by 2030.

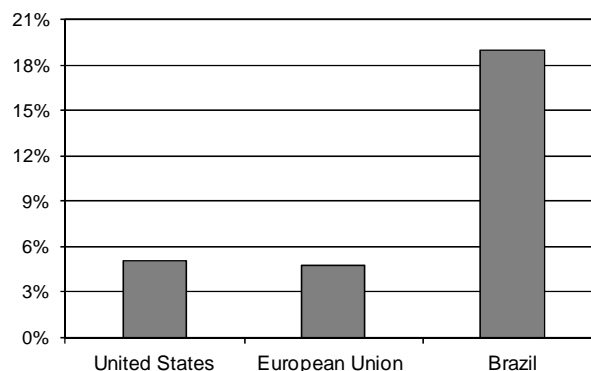
Biofuels account for a comparatively significant share of the energy consumed for road transport in Brazil (Figure 20). As such, Brazilian transport has a relatively low CO₂ emissions intensity.¹⁶ CO₂ emissions per unit of fuel consumed in road traffic are 20% lower than the world average (2.3 versus 2.8 tCO₂ per toe).

Brazil is the world's largest exporter and consumer of fuel ethanol from sugarcane.¹⁷ In 2011, Brazil consumed 146 kbbbl/d of biogasoline, up from 90 in 2006. Currently, cars that can run on either 100% ethanol or a gasoline-anhydrous ethanol blend represent 84% of the new cars purchased in Brazil (an estimated 2.2 million in 2009) and cost the same as cars that can only run on conventional fuel.

16. For a more complete discussion on the advantages and limitations of using biofuels to replace oil, see box on “Using biofuels to reduce transport emissions” in the chapter “Recent trends in energy-related CO₂ emissions”. Note: CO₂ emissions intensity considers the tank-to-wheel emissions and assumes that the CO₂ emissions derived from the combustion of biofuels are zero.

17. In 2005, the United States displaced Brazil as the largest ethanol producer, although mainly derived from corn rather than sugarcane.

Figure 20: Share of biofuels energy in road transport, 2011



Key point: Brazil's relative consumption of biofuels far outstrips that of any other country.

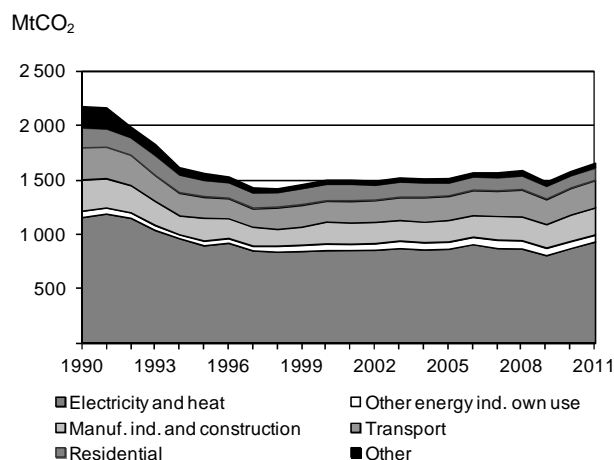
Brazil's profile as an energy producer will be transformed in the medium term, following the discovery in November 2007 of major deepwater oil resources in the Santos Basin, which are now being developed with some fields already in production. Following the approval of a new royalties law in May 2013, the first licensing round for the prolific pre-salt fields is scheduled for October 2013. According to the National Petroleum Agency (ANP), Brazil's total proven oil and condensate reserves as of 31 December 2011 were 16.4 billion barrels.

Russian Federation

The Russian Federation is the only BRICS country where CO₂ emissions fell between 1990 and 2011, with a 24% drop over the period (Figure 21). The economic downturn after the break-up of the Former Soviet Union caused emissions to fall by 35% between 1990 and 1998. Yet, emissions stopped decreasing in 1999, due to the Russian Federation's economic recovery, stimulated by the increase in world energy prices. Emissions remained fairly constant for the following decade. After falling 7% in 2009, largely due to the global financial crisis and lower GDP growth, emissions grew again by 7% in 2010 and by 5% in 2011, the highest annual increases since 1990.

The *WEO 2013* New Policies Scenario projects that the Russian Federation CO₂ emissions will continue to increase steadily, but remain significantly under 1990 levels in 2035.

**Figure 21. Russian Federation:
CO₂ emissions by sector**



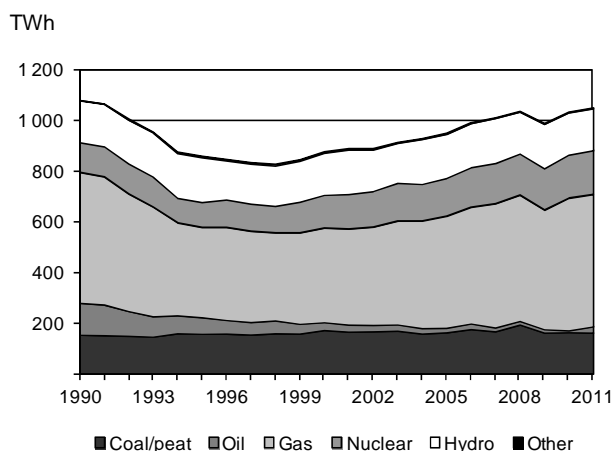
Key point: CO₂ emissions in the Russian Federation have remained fairly constant over the last fifteen years, after the economic downturn of the early nineties.

Besides CO₂ emissions from fuel combustion, other sources of greenhouse gases represent an important share of the Russian GHG emissions: in particular, CH₄ from leaks in the oil and gas transmission/distribution system and CO₂ emissions from flaring of associated gas. To effectively reduce GHG emissions from energy, these two issues would also need to be addressed (IEA, 2006a).

Based on satellite data, the Global Gas Flaring Reduction Partnership estimated that the volume of gas flared in 2010 in Russia was 35.2 bcm, marking a 17 bcm decrease since 2007. Yet, data showed that in 2011 the amount of gas flared increased by another 1.8 bcm. In early 2009, the Russian government passed the resolution “On the Measures Stimulating Reduction of Atmospheric Pollution by Products of Associated Gas Flaring” which limits associated gas flaring levels to 5% of the entire output as from 2012.

Excessive flaring will lead to specific fines in order to incentivise investment in flaring reduction, except for new fields (“green fields”), exempted from the requirement at the initial stages. In order to further discourage flaring and meet its targets, in November 2012 the Russian government approved a more stringent formula for calculating fines, which will increase by around three times in 2013 and six times in 2014, compared with 2012 levels. Overall, these additional measures, if fully implemented, should lead to a faster decrease of associated gas flaring in Russia in the coming years.

**Figure 22. Russian Federation:
Electricity generation by fuel**



Key point: In the Russian Federation, a large portion of the electricity and heat generation comes from non-emitting (nuclear and hydro) or low-emitting (natural gas) sources.

In 2011, the electricity and heat generation sector represented 57% of Russian CO₂ emissions, compared to a global average of 43%. Within this sector, 49% of the electricity was generated by natural gas, 16% by coal and only 3% by oil (Figure 22).

The Russian government enacted a decree in January 2009 that sets targets to increase the share of electricity generated by renewable energy sources (excluding hydro over 25 MW) from less than 1% to 4.5% by 2020. In December 2010, the government introduced a capacity-based support scheme for renewable energy development. Yet as renewable energy deployment barely changed following the introduction of an initial support scheme, further regulatory precisions and amendments were introduced in May 2013. In April 2013, the government’s State Programme targeting renewable energy deployment took a more cautious view on the initial 2020 targets, narrowing the target to 2.5% of electricity generation by 2020 while aiming to achieve a 393 million tonnes CO₂ emissions reduction.

Of the BRICS countries, the Russian Federation had in 2011 the highest CO₂ emissions per capita (11.6 tCO₂), slightly above the average of OECD countries (9.9 tCO₂). In terms of CO₂/GDP, the Russian Federation’s economy remains CO₂ intensive with 0.79 kgCO₂ per unit of GDP, 2.4 times higher than the OECD average. Canada, whose geography and natural resources are comparable to those of the

Russian Federation, has a carbon intensity of 0.43 kgCO₂ per unit of GDP – about half of the Russian Federation’s level. However, IEA statistics show a reduction of the Russian Federation’s energy intensity of GDP of about 5% per year between 1998 and 2008. It is not clear how much this can be attributed to energy efficiency improvements or changes in the sectoral composition of GDP and industrial production mix as opposed to the dramatic increase in GDP due to the country’s much higher export earnings from oil and gas. In fact, the energy intensity actually increased by 4% between 2008 and 2011. This is counter-intuitive, as it was in 2009 that Russia adopted its first Federal Law on energy efficiency setting a target of 40% reduction of the Russian energy intensity by 2020 compared to 2007 levels.

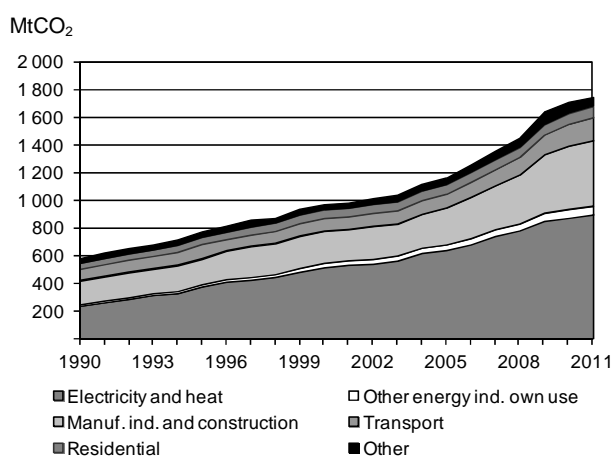
On the long term, the increase in CO₂ emissions may also be limited by lower economic growth figures – and lower than initially expected power demand growth figures; the replacement of ageing power plants with modern combined gas-fired power plants or renewable energy sources; the implementation of ambitious energy efficiency policies; the modernisation of district heating systems; the plan to extend the lifetime of nuclear reactors; and ongoing structural changes in the economy, with the service sector expanding.

India

India emits more than 5% of global CO₂ emissions and shows a clear trend of rapid increase: CO₂ emissions have tripled between 1990 and 2011. The *WEO 2013* New Policies Scenario projects that CO₂ emissions in India increase by 3.4% per year from 2011 to 2035, at which time India would account for 10% of global emissions. A large share of these emissions are produced by the electricity and heat sector, which represented 52% of CO₂ in 2011, up from 40% in 1990. CO₂ emissions in the transport sector accounted for only 10% of total emissions in 2011, but transport is one of the fastest-growing sectors (Figure 23).

In 2011, 68% of electricity in India came from coal, 10% from natural gas and 1% from oil (Figure 24). The share of fossil fuels in the generation mix grew from 73% in 1990 to 85% in 2002 and decreased 6 percentage points since then, due to the growth of renewable sources (e.g. wind represented 2% of total generation in 2011, and solid biofuels 3%).

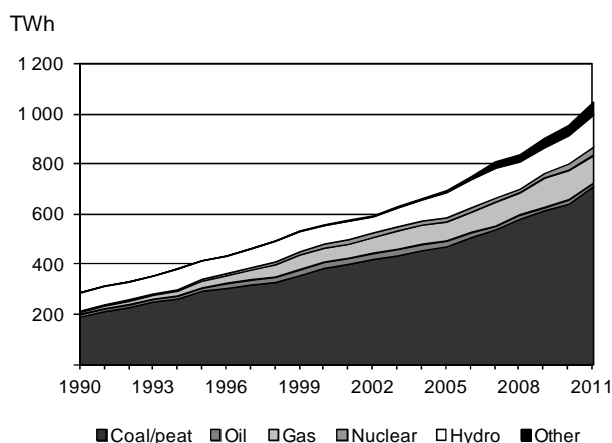
Figure 23. India: CO₂ emissions by sector



Key point: The bulk of CO₂ emissions in India comes from the electricity and heat generation sector, the share of which continues to grow.

According to more recent estimates, India’s renewable power capacity continued its strong growth reaching 23 GW in January 2012, equivalent to nearly 12% of total power capacity (MNRE, 2012; CEA, 2012). Wind comprised the largest capacity with 16 GW or 70% of total renewable capacity, followed by small hydro at 14% and bagasse co-generation at 9%. Solar PV, with 481 MW of capacity or only 2% of total renewable installation, is expected to grow strongly in the medium and long term. One notable aspect of renewable power in India is the high proportion of private ownership, accounting for 86% in March 2012.

Figure 24. India: electricity generation by fuel



Key point: About two-thirds of India’s electricity comes from coal.

Of the BRICS countries, India has the lowest CO₂ emissions per capita (1.4 tCO₂ in 2011), about one-third that of the world average. Due to the recent large increases in emissions, however, emissions per capita were in 2011 more than two times those of 1990 and will continue to grow. Yet according to the *WEO 2013* New Policies Scenario, by 2035 its carbon emissions of 2.5 tCO₂ per capita will still be substantially lower than the world average of 4.3 tCO₂ per capita projected for the same year.

India has continuously improved the efficiency of its economy and reduced the CO₂ emissions per unit of GDP by 20% between 1990 and 2011, although the carbon intensity of its energy mix (CO₂/TPES) increased by 27% over the same period. India aims to further reduce emissions intensity of GDP by 20% to 25% by 2020 compared with the 2005 level.¹⁸

India recently created an executive committee to regularly review the progress made with the nine missions established under its National Action Plan on Climate Change. One key activity identified by the Executive Committee is the need to further mobilise funding to be made available under the National Clean Energy Fund (NCEF) to implement projects under the missions.

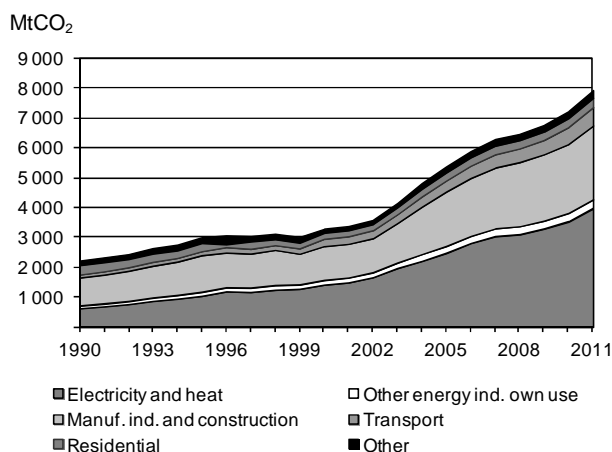
China

With almost 8 billion tonnes of CO₂, Chinese emissions accounted in 2011 for a quarter of global emissions, far surpassing those of the other BRICS countries. In fact, China overtook the United States in 2006 as the world's largest annual emitter of energy-related CO₂, although in cumulative and per-capita terms the United States remains the larger. Chinese CO₂ emissions more than tripled between 1990 and 2011. The increases were especially large during the surge of economic growth and consequent higher energy demand in the middle of the last decade. Due to the global economic crisis, however, the rate of emissions growth slowed in 2008 before returning to higher levels (10% in 2011). The *WEO 2013* New Policies Scenario projects that the growth in Chinese emissions could slow down even further to 1.0% per year on average between 2011 and 2035. Even with this steady decline, emissions in 2035 would be almost 30% higher than current levels.

Since 1990, emissions in the electricity and heat generation sector grew the most, representing 50% of Chinese CO₂ emissions in 2011 (Figure 25). Emissions in

the industry sector also grew rapidly; they represented 31% of CO₂ emissions in 2011. As for transport (8%), the *WEO 2013* New Policies Scenario projects that emissions from the transport sector will continue to grow, accounting for 13% of total emissions in 2035. A key challenge is that switching to low- or zero-carbon energy sources is more difficult in transport than in other sectors.

Figure 25. China: CO₂ emissions by sector



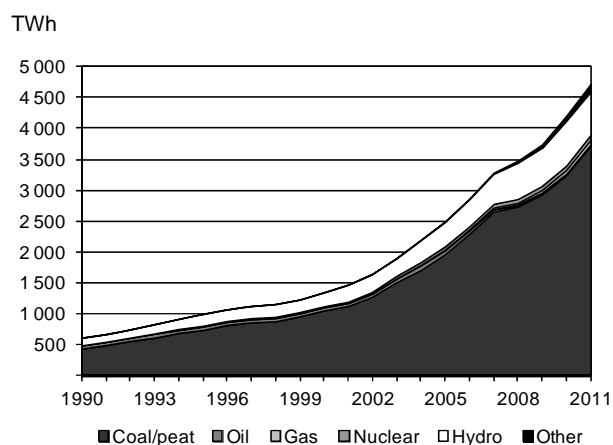
Key point: In recent years, in line with vigorous economic expansion, China showed dramatic growth in CO₂ emissions, especially from electricity and heat generation.

Chinese demand for electricity was the largest driver of the rise in emissions. The rate of capacity additions peaked in 2006, but in 2012 China's installed capacity still rose by a net 80 GW (National Bureau of Statistics, 2013), slightly less than the total installed capacity of Korea. At the same time, China closed nearly 17 GW of small, inefficient fossil fuel-fired plants, roughly equivalent to Finland's installed capacity.

Coal played a major role in supporting the growing demand for electricity generation (Figure 26). Nearly all of the 1990-2011 emissions growth from power generation derived from coal, although the emissions performance of coal-fired power generation continued to improve significantly (IEA, 2009).

In the past few decades, China experienced a rapid decoupling of energy consumption and CO₂ emissions from economic growth. During the 1980s, the central government in China reduced industrial energy intensity by establishing standards and quotas for the energy supplied to firms, and had the authority to shut off the power supply when enterprises exceeded their limits (Lin, 2005). However, as the Chinese economy has become increasingly market-oriented, state-directed

18. As per its stated goal in association with the Copenhagen Accord.

Figure 26. China: electricity generation by fuel

Key point: Coal dominates China's electricity generation and was responsible for the very fast growth in national CO₂ emissions.

investment in energy conservation as a percentage of total energy investment gradually declined (IEA, 2006b), though efficiency remains a policy priority.

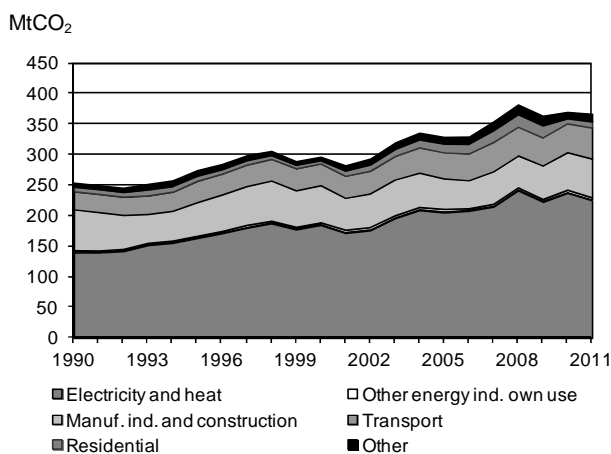
The rapid expansion since 2003 of heavy industrial sectors to serve huge infrastructure investments and burgeoning demand for Chinese products from domestic and overseas consumers pushed up demand for fossil fuels. As a result, CO₂ emissions per unit of GDP actually rose from 2002 to 2005. Still, at 0.80 kgCO₂ per unit of GDP, the 2011 CO₂/GDP is less than half of that in 1990, and a recent push by the government to reduce energy intensity by 16% between 2010 and 2015 has helped to resume the long-term intensity decline, albeit at a slower rate than in the past. Despite the fact that some of the world's largest investments in renewables were made in China, coal dominance in the Chinese power sector has caused a 13% increase in the carbon intensity of the energy mix (CO₂/TPES) since 1990.

Although per-capita CO₂ emissions in China in 2011 were only about 60% of the OECD average level, they have increased threefold since 1990, with many of the largest increases occurring in the last nine years. The country is seeking ways to limit growth in CO₂ emissions, though, and is requiring all provincial and local governments to participate in implementing the 12th Five-Year Plan target of lowering CO₂ emissions per unit of GDP by 17% in 2015 compared to 2010. Regional pilot projects are underway to find practical ways of reaching this target, as well as the national pledge, announced in late 2009 under the Copenhagen Accord, to reduce CO₂ emissions per unit of GDP by 40% to 45% in 2020 compared to 2005.

South Africa

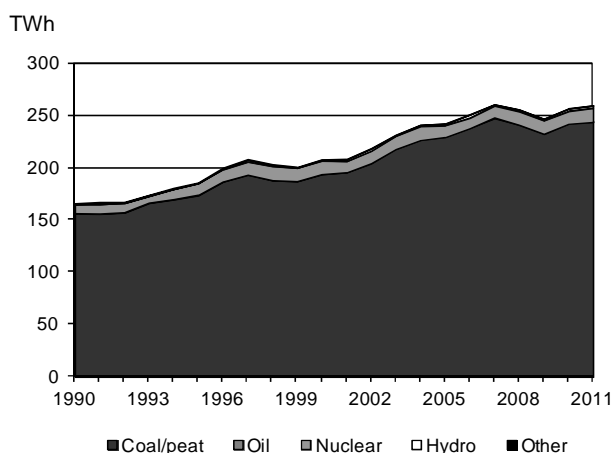
South Africa currently relies heavily on fossil fuels, mainly coal, as a primary energy source (88% in 2011). Although South Africa accounted for 38% of CO₂ emissions from fuel combustion across all of Africa in 2011, it represented only 1% of the global total. The electricity and heat sector produced 61% of South Africa's CO₂ emissions in 2011 (Figure 27).

Coal dominates the South African energy system, accounting for 70% of primary energy supply and 23% of final energy consumption. In 2011, South Africa generated 94% of its electricity using coal (Figure 28).

Figure 27. South Africa: CO₂ emissions by sector

Key point: The largest share of CO₂ emissions in South Africa comes from the electricity and heat sector, but growth remains moderate compared to some of the other BRICS countries.

South Africa submitted a pledge, under the Copenhagen Accord, to reduce emissions by 34% by 2020 and by around 42% by 2025, compared to a current emission baseline. One of the major climate change mitigation issues facing South Africa is the need to reduce emissions from the power sector, primarily by reducing reliance on coal. South Africa is already taking steps to expand the use of both renewable and nuclear energy, to explore the use of carbon capture and storage (CCS) technologies, to explore options for shale gas development, and to reduce energy demand through a nationwide energy efficiency programme. South Africa's public utility, Eskom, also has a target to reduce dependence on conventional coal to 70% by 2025 and reduce GHG emissions in absolute terms by 2050 (including increasing capacity from renewables). South Africa's current target is to reach 3 625 MW of generation capacity from renewables by 2013.

Figure 28. South Africa: electricity generation by fuel

Key point: South Africa relies almost solely on coal to produce its electricity.

The prices of commercial forms of energy in South Africa are, in general, very low by international standards, although a yearly price-hike has been recently introduced. Electricity access programmes are in place, and the electrification rate is relatively high for sub-Saharan Africa, but, especially in rural areas, direct use of commercial forms of energy by households is still limited. Traditional solid biofuels (especially wood) dominate energy use by rural households, causing health and safety problems, as well as concerns about the sustainability of wood supplies.

Between 1990 and 2011, per-capita CO₂ emissions in South Africa remained fairly constant while emissions per unit of GDP decreased by 17%, even if South Africa aims to reduce GHG emissions to 34% below its business-as-usual (BAU) growth trajectory by 2020, increasing to 42% below the BAU trajectory by 2025.

Sustainable energy use requires global engagement

The link between climate change and energy is a part of the larger challenge of sustainable development. The socio-economic and technological characteristics of development paths will strongly affect emissions, the rate and magnitude of climate change, climate change impacts, the capability to adapt and the capacity to mitigate the emissions themselves.

Trends in CO₂ emissions from fuel combustion illustrate the need for all countries to shape a more

sustainable energy future. Special emphasis should first be on the industrialised nations that have the highest per-capita incomes and that are responsible for the bulk of cumulative emissions. However, with the rapidly growing energy demand of developing countries, it is important that they also strive to use energy in a sustainable way. *ETP 2012* shows that enhancing energy efficiency and reducing the carbon intensity of energy supply, which is largely reliant on fossil fuels, are both fundamental steps towards a global low-carbon energy system.

Since the Industrial Revolution, the bulk of annual CO₂ emissions have originated from Annex I countries. Given the size of some developing economies and the rapid growth in their energy needs, this long period of dominance has ended. Effective emissions mitigation will require all countries, regardless of energy demand and infrastructure, to use energy in a sustainable manner.

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PART I:

METHODOLOGY

Note	See multilingual glossary at the end of the publication.
Attention	Voir le glossaire en plusieurs langues à la fin du présent recueil.
Hinweis	Deutsches Glossar auf der letzten Umschlagseite.
Attenzione	Riferirsi al glossario multilingue alla fine del libro.
注意事項	巻末の日本語用語集を参照
Nota	Véase el glosario plurilingüe al final del libro.
Примеч.	Смотрите многоязычный словарь в конце книги.

1. IEA EMISSIONS ESTIMATES

The estimates of CO₂ emissions from fuel combustion presented in this publication are calculated using the IEA energy data¹ and the default methods and emission factors from the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, IPCC/OECD/IEA, Paris, 1997 (*1996 IPCC Guidelines*).

Although the IPCC approved the *2006 Guidelines* at the 25th session of the IPCC in April 2006 in Mauritius, many countries (as well as the IEA Secretariat) are still calculating their inventories using the *1996 IPCC Guidelines* since this was the version used for the Kyoto Protocol. In December 2011 in Durban, the Parties adopted Decision 15/CP.17 to update their reporting tables so as to implement the *2006 Guidelines*. The new reporting tables will be used by Annex I Parties from 15 April 2015.

The IEA Secretariat reviews its energy databases each year. In the light of new assessments, important revisions may be made to the time series of individual countries. Therefore, certain data in this publication may have been revised with respect to previous editions.

Inventory quality

The *IPCC Guidelines* allow Parties under the UNFCCC to prepare and periodically update national inventories that are accurate, complete, comparable and transparent. Inventory quality is an important issue since countries are now implementing legally-binding commitments.

One way to assess inventory quality is to do comparisons among inventories, methodologies and input data. The *IPCC Guidelines* recommend that countries which have used a detailed Sectoral Approach for

CO₂ emissions from energy combustion also use the Reference Approach for verification purposes. This will identify areas where a full accounting of emissions may not have been made (see Chapter 5: *IPCC methodologies*).

Reference Approach vs. Sectoral Approach

The Reference Approach and the Sectoral Approach often give different results because the Reference Approach is a top-down approach using a country's energy supply data and has no detailed information on how the individual fuels are used in each sector.

The Reference Approach provides estimates of CO₂ to compare with estimates derived using a Sectoral Approach. Theoretically, it indicates an upper bound to the Sectoral Approach "1A fuel combustion", because some of the carbon in the fuel is not combusted but will be emitted as fugitive emissions (as leakage or evaporation in the production and/or transformation stage).

Calculating CO₂ emissions inventories with the two approaches can lead to different results for some countries. In general the gap between the two approaches is relatively small (5 per cent or less) when compared to the total carbon flows involved. In cases where 1) fugitive emissions are proportional to the mass flows entering production and/or transformation processes, 2) stock changes at the level of the final consumer are not significant and 3) statistical differences in the energy data are limited, the Reference Approach and the Sectoral Approach should lead to similar evaluations of the CO₂ emissions trends.

When significant discrepancies and/or large time-series deviations do occur, they may be due to various reasons such as:

1. Published in *Energy Statistics of OECD Countries, Energy Balances of OECD Countries, Energy Statistics of Non-OECD Countries and Energy Balances of Non-OECD Countries*, IEA, Paris, 2013.

Large statistical differences between the energy supply and the energy consumption in the basic energy data. Statistical differences arise from the collection of data from different parts of the fuel flow from its supply origins to the various stages of downstream conversion and use. They are a normal part of a fuel balance. Large random statistical differences must always be examined to determine the reason for the difference, but equally importantly smaller statistical differences which systematically show an excess of supply over demand (or vice versa) should be pursued.

Significant mass imbalances between crude oil and other feedstock entering refineries and the (gross) oil products manufactured.

The use of aggregate net calorific and carbon content values for primary fuels which are converted rather than combusted. For example, it may appear that there is not conservation of energy or carbon depending on the calorific value and/or the carbon content chosen for the crude oil entering refineries and for the mix of products produced from the refinery for a particular year. This may cause an overestimation or underestimation of the emissions associated with the Reference Approach.

The misallocation of the quantities of fuels used for conversion into derived products (other than power or heat) **or quantities combusted in energy industry own use.** When reconciling differences between the Reference Approach and a Sectoral Approach it is important to ensure that the quantities reported in transformation and energy industry own use (e.g. for coke ovens) reflect correctly the quantities used for conversion and for fuel use, respectively, and that no misallocation has occurred. Note that the quantities of fuels converted to derived products should have been reported in transformation in the energy balance. If any derived products are used to fuel the conversion process, the amounts involved should have been reported in energy industry own use of the energy balance. In a Sectoral Approach the inputs to transformation should not be included in the activity data used to estimate emissions.

Missing information on certain transformation outputs. Emissions from combustion of secondary fuels produced in integrated processes (for example, coke oven gas) may be overlooked in a Tier 1 Sectoral Approach if data are poor or unavailable. The use of secondary fuels (the output from the transformation process) should be included in the Sectoral Approach. Failure to do so will result in an underestimation of the Sectoral Approach.

Simplifications in the Reference Approach. Certain quantities of carbon should be included in the Reference Approach because their emissions fall under fuel

combustion. These quantities have been excluded where the flows are small or not represented by a major statistic available within energy data. Examples of quantities not accounted for in the Reference Approach include lubricants used in two-stroke engines, blast furnace and other by-product gases which are used for fuel combustion outside their source category of production and combustion of waxed products in waste plants with heat recovery. On the other hand, certain flows of carbon should be excluded from the Reference Approach, but for reasons similar to the above no practical means can be found to exclude them without over complicating the calculations. These include coals and other hydrocarbons injected into blast furnaces as well as cokes used as reductants in the manufacture of inorganic chemicals. These simplifications will determine discrepancies between the Reference Approach and a Sectoral Approach. If data are available, the magnitudes of these effects can be estimated.

Missing information on stock changes that may occur at the final consumer level. The relevance of consumer stocks depends on the method used for the Sectoral Approach. If delivery figures are used (this is often the case) then changes in consumers' stocks are irrelevant. If, however, the Sectoral Approach is using actual consumption of the fuel, then this could cause either an overestimation or an underestimation of the Reference Approach.

High distribution losses or unrecorded consumption for natural gas may mean that the emissions are overestimated by the Reference Approach or underestimated by the Sectoral Approach.

The treatment of transfers and reclassifications of energy products may cause a difference in the Sectoral Approach estimation since different net calorific values and emission factors may be used depending on how the fuel is classified.

Differences between IEA estimates and UNFCCC submissions

It is possible to use the IEA CO₂ estimates for comparison with the greenhouse-gas (GHG) inventories reported by countries to the UNFCCC Secretariat. In this way, problems in methods, input data or emission factors may become apparent. However, care should be used in interpreting the results of any comparison since the IEA estimates may differ from a country's official submission for many reasons.

A recent comparison of the IEA estimates with the inventories submitted to the UNFCCC showed that for most Annex II countries, the two calculations were within 5-10% depending on the coverage of the fuel combustion sector in the national inventory. For some EIT and non-Annex I countries, differences between the IEA estimates and national inventories were larger. In some of the countries the underlying energy data were different, suggesting that more work is needed on the collecting and reporting of energy statistics for those countries.

Some countries have incorrectly defined bunkers as fuel used abroad by their own ships and planes. Still other countries have made calculation errors for carbon oxidation or have included international bunkers in their totals. Since all of the above will affect the national totals of CO₂ emissions from fuel combustion, a systematic comparison with the IEA estimates would allow countries to verify their calculations and produce more internationally comparable inventories.

In addition, the main bias in the energy data and emission factors will probably be systematic and not random. This means that the emission trends will usually be more reliable than the absolute emission levels. By comparing trends in the IEA estimates with trends in emissions as reported to the UNFCCC, it should be possible to identify definition problems or changes in the calculations, which were not reflected in the base year.

For many reasons the IEA estimates may differ from the numbers that a country submits to the UNFCCC, even if a country has accounted for all of its energy use and correctly applied the *IPCC Guidelines*. No attempt has been made to quantify the effects of these differences. In most cases these differences will be relatively small. Some of the reasons for these differences are:

- **The IEA uses a Tier 1 method.**

The IEA uses a Tier 1 Sectoral Approach based on the *1996 IPCC Guidelines*. Countries may be using a Tier 2 or Tier 3 method that takes into account different technologies.

- **The IEA is using the *1996 IPCC Guidelines*.**

The IEA continues to use the *1996 IPCC Guidelines*. Some countries may have already started using the *2006 IPCC Guidelines*.

- **Energy activity data are extracted from the IEA energy balances and may differ from those used for the UNFCCC calculations.**

Countries often have several “official” data sources such as a Ministry, a Central Bureau of Statistics, a nationalised electricity company, etc. Data can also be

collected from the energy suppliers, the energy consumers or customs statistics. The IEA Secretariat tries to collect the most accurate data, but does not necessarily have access to the complete data set that may be available to national experts calculating emission inventories for the UNFCCC. In addition to different sources, the methodology used by the national bodies providing the data to the IEA and to the UNFCCC may differ. For example, general surveys, specific surveys, questionnaires, estimations, combined methods and classifications of data used in national statistics and in their subsequent reclassification according to international standards may result in different series.

- **The IEA uses average net calorific values.**

The IEA uses an average net calorific value (NCV) for each secondary oil product. These NCVs are region-specific and constant over time. Country-specific NCVs that can vary over time are used for NGL, refinery feedstocks and additives. Crude oil NCVs are further split into production, imports, exports and average. Different coal types have specific NCVs for production, imports, exports, inputs to main activity power plants and coal used in coke ovens, blast furnaces and industry, and can vary over time for each country.

Country experts may have the possibility of going into much more detail when calculating the heat content of the fuels. This in turn could produce different values than the IEA.

- **The IEA uses average emission factors.**

The IEA uses the default emission factors which are given in the *1996 IPCC Guidelines*. Country experts may have better information available.

- **The IEA does not have detailed information for the stored carbon calculation.**

The IEA does not have complete information on the non-energy use of fuels. The amount of carbon stored is estimated using the default values given in the *1996 IPCC Guidelines*. For “other products” in the stored carbon calculation, the IEA assumes that 100% of kerosene, white spirit and petroleum coke that is reported as non-energy use in the energy balance is also stored. Country experts calculating the inventories may have more detailed information.

- **The IEA cannot allocate emissions from auto-producers into the end-use sectors.**

The *1996 IPCC Guidelines* recommend that emissions from autoproduction should be included with emissions from other fuel use by end-consumers. At the same time, the emissions from the autoproduction of electricity and heat should be excluded from the

energy transformation source category to avoid double counting. The IEA is not able to allocate the fuel use from autoproducers between industry and *other*. Therefore, this publication shows a category called “Unallocated autoproducers”. However, this should not affect the total emissions for a country.

- **Military emissions may be treated differently.**

According to the *1996 IPCC Guidelines*, military emissions should be reported in Source/Sink Category 1 A 5, *Other (not elsewhere specified)*. Previously, the IEA questionnaires requested that warships be included in international marine bunkers and that the military use of aviation fuels be included in domestic air. All other military use should have been reported in *non-specified other*.

At the IEA/Eurostat/UNECE Energy Statistics Working Group meeting (Paris, November 2004), participants decided to harmonise the definitions used to collect energy data on the joint IEA/Eurostat/UNECE questionnaires with those used by the IPCC to report GHG inventories. As a result, starting in the 2006 edition of this publication, all military consumption should be reported in *non-specified other*. Sea-going versus coastal is no longer a criterion for splitting international and domestic navigation.

However, it is not clear whether countries are reporting on the new basis, and if they are, whether they will be able to revise their historical data. The IEA has found that in practice most countries consider information on military consumption as confidential and therefore either combine it with other information or do not include it at all.

- **The IEA estimates include emissions from coke inputs into blast furnaces. Countries may have included these emissions in the IPCC category industrial processes.**

National GHG inventories submitted to the UNFCCC divide emissions according to source categories. Two of these IPCC Source/Sink Categories are energy and industrial processes. The IPCC Reference Approach estimates national emissions from fuel combustion based on the supply of fuel to a country and by implication includes emissions from coke inputs to blast furnaces in energy industry own use. However, within detailed sectoral calculations certain non-energy processes can be distinguished. In the reduction of iron in a blast furnace through the combustion of coke, the primary purpose of coke oxidation is to produce pig iron and the emissions can be considered as an industrial process. Care must be taken not to double count these emissions in both energy and industrial processes. The IEA estimates of emissions from fuel

combustion in this publication include the coke inputs to blast furnaces.

- **The units may be different.**

The *1996 IPCC Guidelines* and the UNFCCC *Reporting Guidelines on Annual Inventories* both ask that CO₂ emissions be reported in Gg of CO₂. A million tonnes of CO₂ is equal to 1 000 Gg of CO₂, so to compare the numbers in this publication with national inventories expressed in Gg, the IEA emissions must be multiplied by 1 000.

Identifying key sources

In May 2000, the IPCC Plenary accepted the report on *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. The report provides good practice guidance to assist countries in determining their key source categories. By identifying these key sources in the national inventory, inventory agencies can prioritise their efforts and improve their overall estimates.

The Good Practice Guidance identifies a key source category as one that is prioritised within the national inventory system because its estimate has a significant influence on a country’s total inventory of direct greenhouse gases in terms of the absolute level of emissions, the trend in emissions, or both.

For a more complete description of the IPCC methodology for determining key sources, see Chapter 5: *IPCC methodologies*.

In the *Good Practice Guidance*, the recommendation for choosing the level of the key source analysis is to “disaggregate to the level where emission factors are distinguished. In most inventories, this will be the main fuel types. If emission factors are determined independently for some sub-source categories, these should be distinguished in the analysis.”

Since the emission estimates in this publication were produced using the default emission factors from the *1996 IPCC Guidelines*, this means that the fuel combustion categories would have been divided into:

- stationary combustion – coal
- stationary combustion – oil
- stationary combustion – gas
- mobile combustion – coal
- mobile combustion – oil
- mobile combustion – gas

Clearly this level of aggregation is not particularly useful in identifying where additional work is needed

in refining the inventory. It does not take into account the possibility of improving data collection methods, improving emission factors or using a higher tier calculation for certain key sectors within the energy from fuel combustion source category. For this reason the IEA has disaggregated the key source analysis to the same level of detail presented in the country tables of this publication. For each country, the 9 largest sources, split by coal, oil, gas and other, are shown in the key sources table.

For the level assessment, the CO₂ emissions from fuel combustion as calculated by the IEA are supplemented, where possible, by the figures that were submitted by the Annex I Parties to the UNFCCC in the 2013 submission of the Common Reporting Format for CO₂ (only fugitive), CH₄, N₂O, HFCs, PFCs and SF₆, not taking into account CO₂ emissions/removals from land use, land use change and forestry.²

For the non-Annex I Parties, CO₂ emissions from fuel combustion were from the IEA and the rest of the 2011 emissions were estimated by JRC and PBL (See Part III for further information).

Identifying drivers of CO₂ emissions trends

In this edition, new graphs and tables present the decomposition of CO₂ emissions into four driving factors following the Kaya identity³, which is generally presented in the form:

$$\text{Kaya identity} \\ C = P (G/P) (E/G) (C/E)$$

where:

C = CO₂ emissions;

P = population;

G = GDP;

E = primary energy consumption.

The identity expresses, for a given time, CO₂ emissions as the product of population, per capita economic output (G/P), energy intensity of the economy (E/G) and carbon intensity of the energy mix (C/E). Because of possible non-linear interactions between

terms, the sum of the percentage changes of the four factors, e.g. $(P_y - P_x)/P_x$, will not generally add up to the percentage change of CO₂ emissions $(C_y - C_x)/C_x$. However, relative changes of CO₂ emissions in time can be obtained from relative changes of the four factors as follows:

$$\text{Kaya identity: relative changes in time} \\ C_y/C_x = P_y/P_x (G/P)_y/(G/P)_x (C/E)_y/(C/E)_x$$

where x and y represent for example two different years.

In this publication, the Kaya decomposition is presented as:

$$\text{CO}_2 \text{ emissions and drivers} \\ \text{CO}_2 = P (GDP/P) (TPES/GDP) (\text{CO}_2/TPES)$$

where:

CO₂ = CO₂ emissions;

P = population;

GDP⁴/P = GDP/population;

TPES/GDP⁴ = Total Primary Energy Supply per GDP;

CO₂/TPES = CO₂ emissions per unit TPES.

Indices of all terms (1990 = 100 unless otherwise specified) are shown for each country and regional aggregate in Part II, both in the Summary tables and in the individual country/region pages (Table 1, Key indicators, and Figure 6, CO₂ emissions and drivers). Note that in its index form, CO₂/TPES corresponds to the Energy Sector Carbon Intensity Index (ESCI)⁵.

The Kaya identity can be used to discuss the primary driving forces of CO₂ emissions. For example, it shows that, globally, increases in population and GDP per capita have been driving upwards trends in CO₂ emissions, more than offsetting the reduction in energy intensity. In fact, the carbon intensity of the energy mix is almost unchanged, due to the continued dominance of fossil fuels - particularly coal - in the energy mix, and to the slow uptake of low-carbon technologies.

However, it should be noted that there are important caveats in the use of the Kaya identity. Most important, the four terms on the right-hand side of equation should be considered neither as fundamental driving forces in themselves, nor as generally independent from each other.

2. As recommended in the IPCC *Good Practice Guidance*.

3. Yamaji, K., Matsubashi, R., Nagata, Y., Kaya, Y., *An integrated system for CO₂/Energy/GNP analysis: case studies on economic measures for CO₂ reduction in Japan*. Workshop on CO₂ reduction and removal: measures for the next century, March 19, 1991, International Institute for Applied Systems Analysis, Laxenburg, Austria.

4. GDP based on purchasing power parities (PPP).

5. See the IEA publication *Tracking Clean Energy Progress 2013*.

Notes on tables and graphs

Table 1: Key indicators

Row 1: *CO₂ Sectoral Approach* presents total CO₂ emissions from fuel combustion as calculated using the IPCC Tier 1 Sectoral Approach, and corresponds to IPCC Source/Sink Category 1 A. Emissions calculated using a Sectoral Approach include emissions only when the fuel is actually combusted.

Row 2: *TPES* presents the Total Primary Energy Supply, calculated as production + imports - exports - international marine bunkers - international aviation bunkers ± stock changes.

Row 3: *GDP* presents the Gross Domestic Product in 2005 US dollars using exchange rates. For notes on methods and sources, please see Chapter 3: *Indicator sources and methods*.

Row 4: *GDP PPP* presents the Gross Domestic Product in 2005 US dollars using purchasing power parities. For notes on methods and sources, see Chapter 3: *Indicator sources and methods*.

Row 5: *Population*. For notes on sources see Chapter 3: *Indicator sources and methods*.

Row 6: *CO₂/TPES* presents the carbon intensity of the energy mix. For notes on methods see Chapter 3: *Indicator sources and methods*.

Row 7: *CO₂/GDP* presents the carbon intensity of the economy, using exchange rates. For notes on methods and sources, see Chapter 3: *Indicator sources and methods*.

Row 8: *CO₂/GDP PPP* presents the carbon intensity of the economy, using purchasing power parities. For notes on methods and sources, see Chapter 3: *Indicator sources and methods*.

Row 9: *CO₂/population* presents the per capita CO₂ emissions, based on CO₂ Sectoral approach. For notes on sources, see Chapter 3: *Indicator sources and methods*.

Row 10-14: *CO₂ emissions and drivers - Kaya decomposition* present indices of CO₂ emissions, population, GDP/population, TPES/GDP and CO₂/TPES, (based on GDP PPP time series). It represents the decomposition of CO₂ emissions into drivers (Kaya identity) explained earlier in this chapter, in the section *Identifying drivers of CO₂ emissions trends*.

Table 2: CO₂ emissions by sector

Row 1: *Sectoral Approach*: as in Row 1 of Table 1.

Row 2: *Main activity producer electricity and heat* contains the sum of emissions from main activity producer electricity generation, combined heat and power generation and heat plants. Main activity producers are defined as those undertakings whose primary activity is to supply the public. They may be publicly or privately owned. Emissions from own on-site use of fuel are included. This corresponds to IPCC Source/Sink Category 1 A 1 a.

Row 3: *Unallocated autoproducers* contains the emissions from the generation of electricity and/or heat by autoproducers. Autoproducers are defined as undertakings that generate electricity and/or heat, wholly or partly for their own use as an activity which supports their primary activity. They may be privately or publicly owned. In the *1996 IPCC Guidelines*, these emissions would normally be distributed between industry, transport and *other*.

Row 4: *Other energy industry own use* contains emissions from fuel combusted in oil refineries, for the manufacture of solid fuels, coal mining, oil and gas extraction and other energy-producing industries. This corresponds to the IPCC Source/Sink Categories 1 A 1 b and 1 A 1 c. According to the *1996 IPCC Guidelines*, emissions from coke inputs to blast furnaces can either be counted here or in the industrial processes source/sink category. Within detailed sectoral calculations, certain non-energy processes can be distinguished. In the reduction of iron in a blast furnace through the combustion of coke, the primary purpose of the coke oxidation is to produce pig iron and the emissions can be considered as an industrial process. Care must be taken not to double count these emissions in both energy and industrial processes. In the IEA estimations, emissions from energy industry own use in blast furnaces have been included in this category.

Row 5: *Manufacturing industries and construction* contains the emissions from combustion of fuels in industry. The IPCC Source/Sink Category 1 A 2 includes these emissions. However, in the *1996 IPCC Guidelines*, the IPCC category also includes emissions from industry autoproducers that generate electricity and/or heat. The IEA data are not collected in a way that allows the energy consumption to be *split* by specific end-use and therefore, this publication shows autoproducers as a separate item. See Row 3, *Unallocated autoproducers*. *Manufacturing industries and construction* also includes some emissions from coke inputs into blast furnaces,

which may be reported either in transformation, energy industry own use, industry or the separate IPCC Source/Sink Category 2, industrial processes.

Row 6: *Transport* contains emissions from the combustion of fuel for all transport activity, regardless of the sector, except for international marine and aviation bunkers. This includes domestic aviation, domestic navigation, road, rail and pipeline transport, and corresponds to IPCC Source/Sink Category 1 A 3. In addition, the IEA data are not collected in a way that allows the autoproducer consumption to be split by specific end-use and therefore, this publication shows autoproducers as a separate item. See Row 3, *Unallocated autoproducers*.

Note: Starting in the 2006 edition, military consumption previously included in *domestic aviation* and in *road* should be in *non-specified other*. See the section on *Differences between IEA estimates and UNFCCC submissions*, for further details.

Row 7: *Road* contains the emissions arising from fuel use in road vehicles, including the use of agricultural vehicles on highways. This corresponds to the IPCC Source/Sink Category 1 A 3 b.

Row 8: *Other* contains the emissions from commercial/institutional activities, agriculture/forestry, fishing, residential and other emissions not specified elsewhere that are included in the IPCC Source/Sink Categories 1 A 4 and 1 A 5. In the *1996 IPCC Guidelines*, the category also includes emissions from autoproducers in commercial/public services, residential and agriculture that generate electricity and/or heat. The IEA data are not collected in a way that allows the energy consumption to be split by specific end-use, and therefore, this publication shows autoproducers as a separate item. See Row 3, *Unallocated autoproducers*.

Row 9: *Residential* contains all emissions from fuel combustion in households. This corresponds to IPCC Source/Sink Category 1 A 4 b.

Row 10: *Reference Approach* contains total CO₂ emissions from fuel combustion as calculated using the IPCC Reference Approach. The Reference Approach is based on the supply of energy in a country and as a result, all inventories calculated using this method include fugitive emissions from energy transformation (e.g. from oil refineries) which are normally included in Category 1 B. For this reason, Reference Approach estimates are likely to overestimate national CO₂ emissions. In these tables, the difference between the Sectoral Approach and the Reference Approach

includes statistical differences, product transfers, transformation losses and distribution losses.

Row 11: *Differences due to losses and/or transformation* contains emissions that result from the transformation of energy from a primary fuel to a secondary or tertiary fuel. Included here are solid fuel transformation, oil refineries, gas works and other fuel transformation industries. These emissions are normally reported as fugitive emissions in the IPCC Source/Sink Category 1 B, but will be included in 1 A in inventories that are calculated using the IPCC Reference Approach. Theoretically, this category should show relatively small emissions representing the loss of carbon by other ways than combustion, such as evaporation or leakage.

Negative emissions for one product and positive emissions for another product would imply a change in the classification of the emission source as a result of an energy transformation between coal and gas, between coal and oil, etc. In practice, however, it often proves difficult to correctly account for all inputs and outputs in energy transformation industries, and to separate energy that is transformed from energy that is combusted. Therefore, the row *Differences due to losses and/or transformation* sometimes shows quite large positive emissions or even negative ones due to problems in the underlying energy data.

Row 12: *Statistical differences* can be due to unexplained discrepancies in the underlying energy data. They can also be caused by differences between emissions calculated using the Reference Approach and the Sectoral Approach.

Row 13: *International marine bunkers* contains emissions from fuels burned by ships of all flags that are engaged in international navigation. The international navigation may take place at sea, on inland lakes and waterways, and in coastal waters. Consumption by ships engaged in domestic navigation is excluded. The domestic/international split is determined on the basis of port of departure and port of arrival, and not by the flag or nationality of the ship. Consumption by fishing vessels and by military forces is also excluded. Emissions from international marine bunkers should be excluded from the national totals. This corresponds to IPCC Source/Sink Category 1 A 3 d i.

Row 14: *International aviation bunkers* contains emissions from fuels used by aircraft for international aviation. Fuels used by airlines for their road vehicles are excluded. The domestic/international split should be determined on the basis of departure and landing locations and not by the nationality of

the airline. Emissions from international aviation should be excluded from the national totals. This corresponds to IPCC Source/Sink Category 1 A 3 a i.

Table 3: Key sources for CO₂ emissions from fuel combustion in 2011

See section *Identifying key sources* earlier in this chapter for methodological explanations. This table only shows the 9 largest key sources of CO₂ from fuel combustion. As a result, in most cases the cumulative contribution will not be 95% as recommended in the *Good Practice Guidance*. Key sources from fugitive emissions, industrial processes, solvents, agriculture and waste are not shown. The percentage of CO₂ emissions from fuel combustion in total GHG emissions is included as a memo item at the bottom of the table.

Figure 1: CO₂ emissions by fuel

Based on Sectoral approach CO₂ emissions. The product *gas* refers to natural gas. The product *other* includes industrial waste and non-renewable municipal waste.

Figure 2: CO₂ emissions by sector

Based on Sectoral approach CO₂ emissions. The sector *other* includes emissions from commercial/public services, agriculture/forestry and fishing. Emissions from unallocated autoproducers are included in *Electricity and heat*.

Figure 3: Reference vs Sectoral approach

Also includes CO₂ estimates as submitted by national administrations to the UNFCCC, either in National Communications on in national GHG inventories submissions.

Figure 4: Electricity generation by fuel

The product *other* includes geothermal, solar, wind, combustible renewables and waste, etc. Electricity generation includes both main activity producer and autoproducer electricity.

Figure 5: Changes in selected indicators

Presents average annual changes, computed as compounded annual growth rates, for three different periods, for the following variables: CO₂ emissions, CO₂/TPES, CO₂/GDP PPP, CO₂/population. For notes on methodologies and sources, see Chapter 3: *Indicator sources and methods*.

Figure 6: CO₂ emissions and drivers

Presents indices of CO₂ emissions and of four drivers of emission trends, as identified in the Kaya identity: population, GDP/population, TPES/GDP, CO₂/TPES (1990=100 unless otherwise specified), based on GDP PPP time series. For methodology, see section *Identifying drivers of CO₂ emissions trends* earlier in this chapter. For notes on sources, see Chapter 3: *Indicator sources and methods*.

Country notes

Australia

In the 2013 edition, data for Australia were revised back to 2003 due to the adoption of the National Greenhouse and Energy reporting (NGER) as the main energy consumption data source for the Australian energy Statistics. As a result, there are breaks in the time series for many data between 2002 and 2003. The revisions have also introduced some methodological problems. The national statistics appear to have problems identifying inputs and outputs to certain transformation processes such as gas works plants, electricity plants and CHP plants. Energy industry own use and inputs to the transformation processes are sometimes not reported separately in the correct categories. More detailed information is given in the online data documentation of *Energy Balances of OECD countries*, Chapter 5: *Country notes*.⁶

Cambodia

The break in the CO₂/TPES and TPES/GDP timeseries between 2008 and 2009 is due to a break in the timeseries for solid biofuels which creates an artificial increase in TPES between those years.

People's Republic of China

Large statistical differences between supply and consumption in the Chinese energy balances for recent years, especially for coal, may cause significant differences between CO₂ emissions computed according to Reference and Sectoral approach.

Cuba

International marine bunkers for residual fuel oil in the period 1971-1983 were estimated on the basis of 1984 figures and the data reported as domestic navigation in the energy balance.

6. Available at: www.iea.org/statistics/topics/energybalances/.

Estonia

The data reported as lignite in the energy balance represent oil shale.

France

The methodology for calculating main activity electricity and heat production from gas changed in 2000.

Italy

Prior to 1990, gas use in commercial/public services was included in residential.

Japan

Between 2004 and 2007, the IEA received revisions from the Japanese Administration. The first set of revisions received in 2004 increased the 1990 supply by 5% for coal, 2% for natural gas and 0.7% for oil compared to the previous data. This led to an increase of 2.5% in 1990 CO₂ emissions calculated using the Reference Approach while the Sectoral Approach remained fairly constant. For the 2006 edition, the IEA received revisions to the coal and oil data which had a significant impact on both the energy data and the CO₂ emissions. The most significant revisions occurred for coke oven coke, naphtha, blast furnace gas and petroleum coke. These revisions affected consumption rather than supply in the years concerned. As a result, the sectoral approach CO₂ emissions increased for all the years, however at different rates. For example, the sectoral approach CO₂ emissions for 1990 were 4.6% higher than those calculated for the 2005 edition while the 2003 emissions were 1.1% higher than those of the previous edition. Due to the impact these successive revisions have had on the final energy balance as well as on CO₂ emissions, the IEA was in close contact with the Japanese Administration to better understand the reasons behind these changes. These changes are mainly due to the Government of Japan's efforts to improve the input-output balances in the production of oil products and coal products in response to inquiries from the UNFCCC Secretariat. To cope with this issue, the Japanese Administration established a working group in March 2004. The working group completed its work in April 2006. Many of its conclusions were incorporated in the 2006 edition but some further revisions to the time series (especially in industry and *other*) were submitted for the 2007 edition.

Netherlands Antilles

Prior to 1992, the Reference Approach overstates emissions since data for lubricants and bitumen (which store carbon) are not available.

Norway

Discrepancies between Reference and Sectoral Approach estimates and the difference in the resulting growth rates arise from statistical differences between supply and consumption data for oil and natural gas. For Norway, supply of these fuels is the residual of two very large and opposite terms, production and exports.

Singapore

No official data on production and consumption of primary and secondary oil products are available for Singapore. As a result, large discrepancies between the Reference and Sectoral Approach estimates arise from statistical differences between supply and consumption of oil and oil products.

South Africa

Large differences between the Reference and Sectoral Approach estimates are due to losses associated with coal-to-liquid and to a lesser extent gas-to-liquid transformation.

Switzerland

The sectoral breakdown for gas/diesel oil used in residential before 1978 was estimated on the basis of commercial and residential consumption in 1978 and the data reported as commercial consumption in the energy balance in previous years.

Ukraine

To provide a better Reference Approach estimate of CO₂ emissions in 2010, for the purposes of this publication, the IEA Secretariat has adjusted the stock change and statistical difference of natural gas to better match international definitions.

United Kingdom

For reasons of confidentiality, gas for main activity electricity is included in autoproducers for 1990.

Vietnam

A detailed sectoral breakdown is available starting in 1980.

2. UNITS AND CONVERSIONS

General conversion factors for energy

To:	TJ	Gcal	Mtoe	MBtu	GWh
From:	multiply by:				
terajoule (TJ)	1	238.8	2.388×10^{-5}	947.8	0.2778
gigacalorie (Gcal)	4.1868×10^{-3}	1	10^{-7}	3.968	1.163×10^{-3}
million tonne of oil equivalent (Mtoe)	4.1868×10^4	10^7	1	3.968×10^7	11630
million British thermal unit (MBtu)	1.0551×10^{-3}	0.252	2.52×10^{-8}	1	2.931×10^{-4}
gigawatt hour (GWh)	3.6	860	8.6×10^{-5}	3412	1

Conversion factors for mass

To:	kg	t	lt	st	lb
From:	multiply by:				
kilogramme (kg)	1	0.001	9.84×10^{-4}	1.102×10^{-3}	2.2046
tonne (t)	1000	1	0.984	1.1023	2204.6
long ton (lt)	1016	1.016	1	1.120	2240.0
short ton (st)	907.2	0.9072	0.893	1	2000.0
pound (lb)	0.454	4.54×10^{-4}	4.46×10^{-4}	5.0×10^{-4}	1

Conversion factors for volume

To:	gal U.S.	gal U.K.	bbl	ft ³	l	m ³
From:	multiply by:					
U.S. gallon (gal)	1	0.8327	0.02381	0.1337	3.785	0.0038
U.K. gallon (gal)	1.201	1	0.02859	0.1605	4.546	0.0045
barrel (bbl)	42.0	34.97	1	5.615	159.0	0.159
cubic foot (ft ³)	7.48	6.229	0.1781	1	28.3	0.0283
litre (l)	0.2642	0.220	0.0063	0.0353	1	0.001
cubic metre (m ³)	264.2	220.0	6.289	35.3147	1000.0	1

Decimal prefixes

10 ¹	deca (da)	10 ⁻¹	deci (d)
10 ²	hecto (h)	10 ⁻²	centi (c)
10 ³	kilo (k)	10 ⁻³	milli (m)
10 ⁶	mega (M)	10 ⁻⁶	micro (μ)
10 ⁹	giga (G)	10 ⁻⁹	nano (n)
10 ¹²	tera (T)	10 ⁻¹²	pico (p)
10 ¹⁵	peta (P)	10 ⁻¹⁵	femto (f)
10 ¹⁸	exa (E)	10 ⁻¹⁸	atto (a)

Tonne of CO₂

The *1996 IPCC Guidelines* and the *UNFCCC Reporting Guidelines on Annual Inventories* both ask that CO₂ emissions be reported in Gg of CO₂. A million tonnes of CO₂ is equal to 1 000 Gg of CO₂, so to compare the numbers in this publication with national inventories expressed in Gg, multiply the IEA emissions by 1 000.

Other organisations may present CO₂ emissions in tonnes of carbon instead of tonnes of CO₂. To convert from tonnes of carbon, multiply by 44/12, which is the molecular weight ratio of CO₂ to C.

3. INDICATOR SOURCES AND METHODS

Population

The main source of the 1970 to 2011 population data for the OECD member countries is *National Accounts of OECD Countries, Volume 1*, 2013. Data for 1960 to 1969 have been estimated using the growth rates from the population series published in the *OECD Economic Outlook No. 76*. For the **Czech Republic**, **Hungary** and **Poland** (1960 to 1969) and **Mexico** (1960 to 1962), the data are estimated using the growth rates from the population series from the World Bank published in the *World Development Indicators CD-ROM*. For the **Slovak Republic**, population data for 1960 to 1989 are from the Demographic Research Centre, Infostat, Slovak Republic.

The main source of the population data for the OECD non-member countries is *World Development Indicators*, World Bank, Washington D.C., 2013. Population data for **Chinese Taipei**, **Gibraltar**, **Netherlands Antilles**,⁷ **Former Soviet Union** (before 1990), **Former Yugoslavia** (before 1990) and for a few countries within the regions **Other Africa**, **Other Non-OECD Americas** and **Other Asia** are based on the CHELEM-CEPII online database, 2013. Population data for 2010 for **Cyprus**⁷ were calculated using the population growth rate supplied by Eurostat, 2013.

GDP and GDP PPP

The main source of the 1970 to 2011 GDP series for the OECD member countries is *National Accounts of OECD Countries, Volume 1*, 2013. For the OECD member countries, the PPPs selected to convert the GDP from national currencies to US dollars come from the OECD Secretariat and were aggregated using

the Geary-Khamis (GK) method and rebased on the United States. For a more detailed description of the methodology please see *Methodological Manual of Purchasing Power Parities*, Eurostat/OECD, 2006. The PPPs for the other countries come from the World Bank and CHELEM-CEPII.⁸

GDP data for **Australia**, **France**, **Greece** and **Sweden** for 1960 to 1969 and **Denmark** for 1966 to 1969 as well as for **Netherlands** for 1969 come directly from the most recent volume of *National Accounts*. GDP data for 1960 to 1969 for the other countries have been estimated using the growth rates from the series in the *OECD Economic Outlook No. 76* and data previously published by the OECD Secretariat. Data prior to 1986 for **Chile**, prior to 1990 for the **Czech Republic** and **Poland**, prior to 1991 for **Hungary**, and prior to 1992 for the **Slovak Republic** are IEA Secretariat estimates based on GDP growth rates from the World Bank.

The main source of the GDP series for the non-OECD member countries is *World Development Indicators*, World Bank, Washington D.C., 2013. The GDP data have been compiled for individual countries at market prices in local currency and annual rates. These data have been scaled up/down to the price levels of 2005 and then converted to US dollars using the yearly average 2005 exchange rates and purchasing power parities (PPPs).

GDP figures for **Bahrain**, **Brunei** (up to 1979), **Chinese Taipei**, **Cyprus**⁷ (1971-1980), **Ethiopia** (1971-1980), **Gibraltar**, **Iran**, **Iraq** (up to 1996), **Lebanon** (up to 1987), **Jordan** (up to 1974), **Myanmar**,

8. Purchasing power parities are the rates of currency conversion that equalise the purchasing power of different currencies. A given sum of money, when converted into different currencies at the PPP rates, buys the same basket of goods and services in all countries. In other words, PPPs are the rates of currency conversion which eliminate the differences in price levels between different countries.

7. Please refer to Part I, Chapter 4: *Geographical coverage*.

Netherlands Antilles,⁷ Democratic People's Republic of Korea, Qatar (up to 2011), Former Soviet Union (before 1990), Former Yugoslavia (before 1990) and a few countries within the regions⁷ Other Africa, Other Non-OECD Americas and Other Asia are based on the CHELEM-CEPII online databases, 2013.

The main source of the GDP PPP data is *World Development Indicators*, The World Bank, Washington, D.C., 2013, available for GDP PPP (constant 2005 USD) only from 1980. Prior to 1980, GDP PPP data have been estimated based on a constant ratio of exchange rate to PPP. GDP PPP figures for Chinese Taipei, Gibraltar, Netherlands Antilles⁷, Myanmar, Democratic People's Republic of Korea, Zimbabwe, Former Soviet Union (before 1990), Former Yugoslavia (before 1990) and a few countries within the regions⁷ Other Africa, Other Non-OECD Americas and Other Asia are based on the CHELEM-CEPII online databases, 2013.

GDP PPP figures for Bosnia and Herzegovina (up to 1993), Haiti (up to 1990), Iraq (up to 1996), Libya (up to 1998), Tanzania (up to 1987), Vietnam (up to 1983) and Yemen (up to 1989) have been estimated based on the growth rates of the CHELEM-CEPII online database, 2013.

The World Bank GDP figures for Kosovo are available starting in 2000. The GDP PPP figures have been estimated using the World Bank ratio of exchange rate to PPP in 2005 for Serbia since the ratio for Kosovo was not available.

CO₂ emissions

The estimates of CO₂ emissions in this publication are based on the *1996 IPCC Guidelines* and represent the total emissions from fuel combustion. Emissions have been calculated using both the IPCC Reference Approach and the IPCC Sectoral Approach (which corresponds to IPCC Source/Sink Category 1 A). Reference Approach totals may include certain fugitive emissions from energy transformation which should normally be included in Category 1 B. National totals do not include emissions from international marine and aviation bunkers. See the Country Notes in Chapter 1 for further details.

Electricity output

Total output (shown in the summary tables section) includes electricity generated using fossil fuels, nuclear, hydro (excluding pumped storage), geothermal, solar, biofuels, etc.

Both main activity⁹ producer and autoproducer¹⁰ plants have been included where available.

Data include the total amount of electricity in TWh generated by both electricity plants and CHP plants. Heat production from CHP plants is not included.

CO₂ / TPES

This ratio is expressed in tonnes of CO₂ per terajoule. It has been calculated using the Sectoral Approach CO₂ emissions and total primary energy supply (including biofuels and other non-fossil forms of energy).

CO₂ / GDP

This ratio is expressed in kilogrammes of CO₂ per 2005 US dollar. It has been calculated using the Sectoral Approach CO₂ emissions and is shown with both GDP calculated using exchange rates and GDP calculated using purchasing power parities.

CO₂ / population

This ratio is expressed in tonnes of CO₂ per capita. It has been calculated using the Sectoral approach CO₂ emissions.

Per capita CO₂ emissions by sector

These ratios are expressed in kilogrammes of CO₂ per capita. They have been calculated in two different ways. In the first ratio, the emissions from electricity and heat production are shown separately. In the second ratio, the emissions from electricity and heat have been allocated to final consuming sectors in proportion to the electricity and heat consumed by those sectors.

9. Main activity producers generate electricity and/or heat for sale to third parties, as their primary activity. They may be privately or publicly owned. Note that the sale need not take place through the public grid.

10. Autoproducer undertakings generate electricity and/or heat, wholly or partly for their own use as an activity which supports their primary activity. They may be privately or publicly owned.

CO₂ emissions per kWh

The indicator: definition

In the total CO₂ emissions per kWh, the numerator presents the CO₂ emissions from fossil fuels consumed for electricity generation, while the denominator presents the total electricity generated, coming from fossil fuels, but also from nuclear, hydro, geothermal, solar, biofuels, etc. As a result, the emissions per kWh vary a lot across countries and from year to year, depending on the generation mix.

In the CO₂ emissions per kWh **by fuel**:

- Coal/peat includes primary and secondary coal, peat and coal gases.
- Oil includes oil products (and small amounts of crude oil for some countries).
- Gas represents natural gas.

Note: Emissions per kWh should be used with caution due to data quality problems relating to electricity efficiencies for some countries.

Methodological choices: electricity-only versus combined electricity and heat

In previous editions of this publication, the IEA had published a combined electricity and heat CO₂ emissions per kWh indicator. The indicator was useful as an overall carbon intensity measure of a country's electricity and heat generating sectors, and it was easy to calculate. However, there were a number of drawbacks. As the efficiency of heat generation is almost always higher than electricity generation, countries with large amounts of district heating (generally colder countries) tended to have a higher efficiency (therefore lower CO₂ intensity) than warmer countries with less district heating. Further, the applications of a combined indicator for electricity and heat are limited; many users have been searching for an electricity-only CO₂ emissions per kWh indicator.

Unfortunately, it is not possible to obtain such an electricity-only indicator directly from IEA energy balance data without any assumption. In fact, for combined heat and power (CHP) plants, there is only one combined input available. While various methods exist to split this input into separate amounts for electricity and heat generation, none has previously been used by the IEA for the purposes of calculating a CO₂ emissions per kWh indicator.

It would be possible to calculate an electricity-only indicator using data for electricity-only plants, which would not encounter the problem of assigning CHP

inputs between electricity and heat. However, this would not allow a fair cross-country comparison; some countries get a majority of their electricity from CHP, while others from electricity-only plants. As non-thermal renewables are solely electricity-only plants, and over 99% of non-emitting global nuclear generation is from electricity-only plants, then calculating this electricity-only plants indicator would significantly understate the electricity carbon intensity for many countries.

Electricity-only indicator: allocation of emissions from CHP plants

To allocate the CHP input to electricity and heat separately, the simplest method would be a **proportionality approach**, allocating inputs based on the proportion of electricity and heat in the output, also used by the IEA electricity questionnaire. This is equivalent to fixing the efficiency of electricity and heat to be equal. With the advantage of simplicity and transparency, the proportionality approach however tends to overstate electricity efficiency and to understate heat efficiency. For example, for CHP generation in OECD countries, total efficiency is around 60%. However, total electricity-only plant efficiency is around 41% in OECD. Similarly, 60% is quite low for heat generation (given typical heat-only plant efficiencies of 80-95%).

An alternative method to avoid unrealistic efficiencies is a **fixed-heat-efficiency approach**, fixing the efficiency of heat generation to compute the input to heat, and calculating the input to electricity as a residual from the total input. The standard heat efficiency was set to that of a typical heat boiler, 90%.

Implementation problems arise in two cases: i) when the observed efficiency is over 100% (*i.e.* there are problems in data quality), and ii) when the observed efficiency is between 90% and 100% (the total efficiency may be correct or it may be overstated).

In the first case, when the total efficiency is over 100% because the data are not reported correctly, it is not possible to use the fixed-heat-efficiency approach and by default the proportionality approach was used to allocate the inputs based on the output shares.

In the second case, where the total CHP efficiency was between 90% and 100% (which may or may not indicate a data quality problem), assuming a 90% efficiency for heat generation would incorrectly imply that the efficiency of power generation was equal to or higher than that of heat generation. However, as the real heat efficiency cannot be determined, the proportionality approach was used also here by default.

Fixed-heat-efficiency approach

$$\text{CO}_2\text{kWh} = \frac{\text{CO}_{2\text{ELE}} + (\text{CO}_{2\text{CHP}} \times \% \text{ from elec.}) + \text{OWNUSE}_{\text{ELE}}}{\text{ELoutput}_{\text{ELE}} + \text{ELoutput}_{\text{CHP}}}$$

where:

$$\% \text{ from elec.} = \frac{\text{CHPinputs} - ((\text{HEoutput}_{\text{CHP}} \times 0.02388) \div \text{EFF}_{\text{HEAT}})}{\text{CHPinputs}}$$

and:

$$\text{OWNUSE}_{\text{ELE}} = \text{OWNUSE} \times \frac{\text{ELoutput}}{\text{ELoutput} + (\text{HEoutput} \div 3.6)}$$

$\text{CO}_{2\text{ELE}}$ = CO₂ emissions from electricity only plants in ktCO₂

$\text{CO}_{2\text{CHP}}$ = CO₂ emissions from CHP plants in ktCO₂

OWNUSE = CO₂ emissions from own use in electricity, CHP and heat plants in ktCO₂

ELoutput = total electricity output from electricity and CHP plants in GWh

ELoutput_{ELE} = electricity output from electricity only plants in GWh

ELoutput_{CHP} = electricity output from CHP plants in GWh

HEoutput = total heat output from CHP and heat plants in TJ

HEoutput_{CHP} = heat output from CHP plants in TJ

CHPinputs = energy inputs to CHP plants in ktoe

EFF_{HEAT} = efficiency of heat generation - assumed to be 0.9 (*i.e.* 90%) except when the observed efficiency of CHP generation is higher than 90%, in which case emissions are allocated using the proportionality approach (EFF_{HEAT} = EFF_{ELEC} = EFF_{CHP}).

In general, the fixed-heat-efficiency approach attributes larger emissions to electricity than the proportionality approach, with values much closer to those of electricity-only plants. The IEA has already used the fixed-heat-efficiency approach for several editions of its *World Energy Outlook*.

Comparison between electricity-only and combined electricity and heat ratios

For the majority of OECD countries, the electricity-only indicator is not significantly different from the combined electricity and heat indicator, shown in previous editions of this publication and in the online database. For the OECD total in 2011, the electricity-only indicator is 3% higher, while 20 of the OECD's 34 countries saw a change of 5% or less. Of the 14 countries changing more than 5%, six countries had large amounts of non-emitting electricity generation, giving them a small ratio to begin with (thus more prone to change). In addition, non-emitting generation is generally electricity-only, and so when the heat-only and heat CHP emissions are removed from the calculation, greater weight is attached to the

non-emitting generation, with a lower level for the final indicator.

The countries in the OECD with larger differences are generally coal-intensive countries with large amounts of heat generation. As mentioned, in general, heat plants are more efficient than electricity-only or CHP plants; therefore, excluding heat plants from the calculation increases CO₂ intensity. The same is true if we allocate a high efficiency to the heat part of CHP generation; this decreases the efficiency of the electricity part and thus increases electricity's carbon intensity. Further, CHP and heat plants are more likely to be powered by CO₂-light natural gas while electricity-only plants tend to be powered by CO₂-heavy coal, making the new ratio more CO₂ intensive for these countries.

Specific country examples

The country with the largest difference between the two ratios within the OECD was **Sweden**; in 2011, the electricity only indicator was 59% lower than the combined electricity and heat indicator. This is due to the high share of non-emitting sources such as hydro

(44%) and nuclear (40%) in Sweden's electricity generation mix.

Similarly, the electricity only indicator for **Norway** in 2011 was 39% lower than the combined indicator, as the vast majority of the electricity output (95%) is from non-emitting hydroelectric generation.

Conversely, for **Estonia** in 2011 the electricity-only indicator was 37% higher than the combined electricity and heat indicator. This can be explained by the fact that the majority of electricity-only generation comes from oil shale, a fuel with a relatively high carbon emission factor, while heat plants (with a relatively large share of output) are largely fuelled by natural gas.

Another OECD country with a high ratio increase was **Denmark** (26% higher in 2011). The majority of fossil generation in Denmark is from CHP and the output from these plants is approximately half electricity and half heat. In addition, CHP plants in Denmark have efficiencies of 60-70%. When the heat part of CHP is set to be 90%, the efficiency of the electricity generation is lowered and the indicator is increased.

In many non-member countries, heat data are either zero or not available, which leads to changes of less than 1% in almost three-quarters of the non-member countries in 2011. The majority of countries which do change are the European and former Soviet Union countries (where district heating is often present).

As **China** has no (reported) CHP generation, the current IEA energy balance shows electricity-only and heat-only plants, not CHP plants. Heat-only plants are in general much more efficient per unit of energy than electricity-only plants and this explains why the new ratio is 7% higher in 2011.

In the **Russian Federation**, a large amount (34% of total power output) comes from heat-only plants, whose relatively efficient generation is excluded from the new ratio. The large amount of heat output generated by CHP plants also explains why the new ratio is 32% higher in 2011.

The electricity only indicators calculated for the following non-member countries are also lower than the combined electricity and heat indicator: **Georgia**, **Latvia**, **Kyrgyzstan** and **Tajikistan**. This is because their electricity production is mainly or exclusively clean hydro, while their CHP and heat-only production is fossil based. Implementing the new electricity-only indicator using the fixed-heat-efficiency approach increased hydro's weight (therefore decreasing the carbon intensity).

Implied carbon emission factors from electricity generation (CO₂ / kWh) for selected products

Average implied carbon emission factors from electricity generation by product are presented below, for selected products. Those values are given as a complement of the CO₂ emissions per kWh from electricity generation by country presented in the Summary tables of Part II. The values below represent the average amount of CO₂ per kWh of electricity produced in OECD member countries between 2009 and 2011. As they are very sensitive to the quality of underlying data, including net calorific values, and of reported input/output efficiencies, they should be taken as indicative; actual values may vary considerably.

Product	gCO ₂ / kWh
Anthracite *	965
Coking coal *	785
Other bituminous coal	860
Sub-bituminous coal	925
Lignite	1005
Coke oven coke *	800
Gas works gas *	420
Coke oven gas *	415
Blast furnace gas *	2200
Other recovered gases *	2030
Natural gas	400
Crude oil *	635
Natural gas liquids *	540
Refinery gas *	410
Liquefied petroleum gases *	530
Kerosene *	645
Gas/diesel oil *	715
Fuel oil	670
Petroleum coke *	970
Peat *	745

* The electricity output from these products represents less than 1% of electricity output in the average of OECD member countries for the years 2009-2011. Values will be less reliable and should be used with caution.

4. GEOGRAPHICAL COVERAGE

Africa includes Algeria, Angola, Benin, Botswana (from 1981), Cameroon, Congo, Democratic Republic of Congo, Côte d'Ivoire, Egypt, Eritrea, Ethiopia, Gabon, Ghana, Kenya, Libya, Morocco, Mozambique, Namibia (from 1991), Nigeria, Senegal, South Africa, Sudan¹¹, United Republic of Tanzania, Togo, Tunisia, Zambia, Zimbabwe and **Other Africa**.

Other Africa includes Botswana (until 1980), Burkina Faso, Burundi, Cape Verde, Central African Republic, Chad, Comoros, Djibouti, Equatorial Guinea, Gambia, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Namibia (until 1990), Niger, Reunion, Rwanda, Sao Tome and Principe, Seychelles, Sierra Leone, Somalia, Swaziland, Uganda and Western Sahara (from 1990).

Middle East includes Bahrain, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates and Yemen.

Non-OECD Europe and Eurasia includes Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus¹², Georgia, Gibraltar, Kazakhstan, Kosovo, Kyrgyzstan, Latvia, Lithuania,

Former Yugoslav Republic of Macedonia (FYROM), Malta, Republic of Moldova, Montenegro, Romania, Russian Federation, Serbia¹³, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, Former Soviet Union¹⁴ (prior to 1990) and Former Yugoslavia¹⁴ (prior to 1990).

Non-OECD Americas includes Argentina, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Netherlands Antilles¹⁵, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, Venezuela and **Other Non-OECD Americas**.

Other Non-OECD Americas includes Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Cayman Islands, Dominica, Falkland Islands, French Guyana, Grenada, Guadeloupe, Guyana, Martinique, Montserrat, Puerto Rico¹⁶ (for natural gas and electricity), St. Kitts and Nevis, Saint Lucia, St. Pierre and Miquelon, St. Vincent and the Grenadines, Suriname and Turks/Caicos Islands.

China includes the People's Republic of China and Hong Kong (China) but excludes Macau (China).

Asia includes Bangladesh, Brunei Darussalam, Cambodia (from 1995), Chinese Taipei, India, Indonesia, DPR of Korea, Malaysia, Mongolia (from 1985),

11. Because only aggregated data were available until 2011, the data for Sudan also include South Sudan.

12. Note by Turkey: *The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus" issue.*

Note by all the European Union Member States of the OECD and the European Union: *The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this report relates to the area under the effective control of the Government of the Republic of Cyprus.*

13. Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

14. Prior to 1990, Former Soviet Union includes Estonia and Former Yugoslavia includes Kosovo, Montenegro and Slovenia.

15. The Netherlands Antilles was dissolved on 10 October 2010 resulting in two new constituent countries, Curaçao and Saint Maarten, with the other islands joining the Netherlands. However, due to lack of detailed data, the IEA data and estimates under Netherlands Antilles cover the whole territory of the Netherlands Antilles.

16. Oil statistics as well as coal trade statistics for Puerto Rico are included under the United States.

Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Vietnam and **Other Asia**.

Other Asia includes Afghanistan, Bhutan, Cambodia (until 1994), Cook Islands, East Timor, Fiji, French Polynesia, Kiribati, Laos, Macau, Maldives, Mongolia (until 1984), New Caledonia, Palau (from 1994), Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu.

The **Organisation for Economic Co-Operation and Development (OECD)** includes Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia¹⁷, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel¹⁸, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia¹⁷, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States.

Within the **OECD**:

Australia excludes the overseas territories.

Denmark excludes Greenland and the Danish Faroes, except prior to 1990, where data on oil for Greenland were included with the Danish statistics. The National Administration is planning to revise the series back to 1974 to exclude these amounts.

France includes Monaco, and excludes the following overseas departments and territories: Guadeloupe, Guyana, Martinique, New Caledonia, French Polynesia, Reunion and St. Pierre and Miquelon.

Germany includes the new federal states of Germany from 1970 onwards.

The statistical data for **Israel** are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Italy includes San Marino and the Vatican.

Japan includes Okinawa.

The **Netherlands** excludes Suriname and the Netherlands Antilles.

17. Estonia and Slovenia are included in OECD totals starting in 1990. Prior to 1990, data for Estonia are included in Former Soviet Union and data for Slovenia in Former Yugoslavia.

18. The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Portugal includes the Azores and Madeira.

Spain includes the Canary Islands.

Switzerland includes Liechtenstein for oil data only. Data for other fuels do not include Liechtenstein.

Shipments of coal and oil to the Channel Islands and the Isle of Man from the **United Kingdom** are not classed as exports. Supplies of coal and oil to these islands are, therefore, included as part of UK supply. Exports of natural gas to the Isle of Man are included with the exports to Ireland.

United States includes the 50 states and the District of Columbia. Oil statistics as well as coal trade statistics also include Puerto Rico¹⁹, Guam, the Virgin Islands, American Samoa, Johnston Atoll, Midway Islands, Wake Island and the Northern Mariana Islands.

OECD Americas includes Canada, Chile, Mexico and the United States.

OECD Asia Oceania includes Australia, Israel¹⁸, Japan, Korea and New Zealand.

OECD Europe includes Austria, Belgium, the Czech Republic, Denmark, Estonia¹⁷, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, the Slovak Republic, Slovenia¹⁷, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

The **European Union - 27 (EU-27)** includes Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, the Slovak Republic, Slovenia, Spain, Sweden and the United Kingdom.

The **International Energy Agency (IEA)** includes Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Korea, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States.

Annex I Parties includes Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, the Czech Republic²⁰, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein (not available in this publication), Lithuania, Luxembourg, Malta,

19. Natural gas and electricity data for Puerto Rico are included under Other Non-OECD Americas.

20. Czechoslovakia was in the original list of Annex I countries.

Monaco (included with France), the Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, the Slovak Republic²⁰, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom and the United States.

The countries that are listed above are included in Annex I of the United Nations Framework Convention on Climate Change as amended on 11 December 1997 by the 12th Plenary meeting of the Third Conference of the Parties in Decision 4/CP.3. This includes the countries that were members of the OECD at the time of the signing of the Convention, the EEC, and fourteen countries in Central and Eastern Europe and the Former Soviet Union that were undergoing the process of transition to market economies. At its fifteenth session, the Conference of the Parties decided to amend Annex I to the Convention to include Malta (Decision 3/CP.15). The amendment entered into force on 26 October 2010.

Annex II Parties includes Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States.

According to Decision 26/CP.7 in document FCCC/CP/2001/13/Add.4, Turkey has been deleted from the list of Annex II countries to the Convention. This amendment entered into force on 28 June 2002.

Annex II North America includes Canada and the United States.

Annex II Europe includes Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Annex II Asia Oceania includes Australia, Japan and New Zealand.

Economies in Transition (EITs) are those countries in Annex I that were undergoing the process of transition to a market economy. This includes Belarus, Bulgaria, Croatia, the Czech Republic²⁰, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russian Federation, the Slovak Republic²⁰, Slovenia and Ukraine.

Annex I Kyoto Parties includes Australia, Austria, Belgium, Bulgaria, Canada, Croatia, the Czech Republic²⁰, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein (not available in this publication), Lithuania, Luxembourg, Monaco (included with France), the Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, the Slovak Republic²⁰, Slovenia, Spain, Sweden, Switzerland, Ukraine and the United Kingdom.

Membership in the Kyoto Protocol is almost identical to that of Annex I, except for Malta, Turkey and Belarus which did not agree to a target under the Protocol, and the United States which has expressed the intention not to ratify the Protocol. In accordance with article 27 (1) of the Kyoto Protocol to the UNFCCC, the Government of Canada notified the Secretary-General of the United Nations that it has decided to withdraw from the Kyoto Protocol. The action will become effective for Canada on 15 December 2012 in accordance with article 27 (2). For the purposes of this edition, Canada is still included in the Annex I and Annex II Kyoto Parties.

Please note that the following countries have not been considered due to lack of complete data:

Africa: Saint Helena.

Asia and Oceania: Christmas Island, Nauru, Niue and Tuvalu.

Non-OECD Americas: Anguilla.

Non-OECD Europe and Eurasia: Andorra, Liechtenstein²¹ (except for oil data).

21. Oil data for Liechtenstein are included under Switzerland.

5. IPCC METHODOLOGIES

General notes

The ultimate objective of the UNFCCC (the Convention) is the stabilisation of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The Convention also calls for all Parties to commit themselves to the following objectives:

- to develop, update periodically, publish and make available to the Conference of the Parties (COP) their national inventories of anthropogenic emissions by sources and removals by sinks, of all greenhouse gases not controlled by the Montreal Protocol.
- to use comparable methodologies for inventories of GHG emissions and removals, to be agreed upon by the COP.

As a response to the objectives of the UNFCCC, the IEA Secretariat, together with the IPCC, the OECD and numerous international experts, has helped to develop and refine an internationally-agreed methodology for the calculation and reporting of national GHG emissions from fuel combustion. This methodology was published in 1995 in the *IPCC Guidelines for National Greenhouse Gas Inventories*. After the initial dissemination of the methodology, revisions were added to several chapters, and published as the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories (1996 IPCC Guidelines)*. In April 2006, the IPCC approved the *2006 Guidelines* at the 25th session of the IPCC in Mauritius. For now, many countries (as well as the IEA Secretariat) are still calculating their inventories using the *1996 IPCC Guidelines* since this was the version used for the Kyoto Protocol.²² In December 2011 in Durban, the

Parties adopted Decision 15/CP.17 to update their reporting tables so as to implement the *2006 Guidelines*. These tables are currently under development and there will be a trial period that runs until end May 2013. The new reporting tables will be mandatory from 15 April 2015.

Since the IPCC methodology for fuel combustion is largely based on energy balances, the IEA estimates for CO₂ from fuel combustion published in this document have been calculated using the IEA energy balances and the default IPCC methodology. However, other possibly more detailed methodologies may be used by Parties to calculate their inventories. This may lead to different estimates of emissions. See Chapter 1: *IEA emissions estimates*, for further details.

The calculation of CO₂ emissions from fuel combustion may be done at three different levels referred to as Tiers 1, 2 and 3. The Tier 1 methods estimate the emissions from the carbon content of fuels supplied to the country as a whole (the Reference Approach) or to the main fuel combustion activities (Sectoral Approach). The following chapter summarises the IPCC Tier 1 methodology from the *1996 IPCC Guidelines*.

Reference Approach

Introduction

Carbon dioxide emissions are produced when carbon-based fuels are burned. National emissions estimates are based on the amounts of fuels used and on the carbon content of fuels.

Fuel combustion is widely dispersed throughout most activities in national economies and compiling a complete record of the quantities of each fuel type consumed in each end-use activity is a considerable

22. Both the *1996 IPCC Guidelines* and the *2006 IPCC Guidelines* are available from the IPCC Greenhouse Gas Inventories Programme (www.ipcc-nggip.iges.or.jp).

task, which some countries have not undertaken. Fortunately, it is possible to obtain a relatively accurate estimate of national CO₂ emissions by accounting for the carbon in fuels supplied to the economy. The supply of fuels is straightforward and the statistics are more likely to be available in many countries.

In accounting for fuels supplied²³ it is important to distinguish between *primary fuels* (i.e. fuels which are found in nature such as coal, crude oil, natural gas), and *secondary fuels* or fuel products, such as gasoline and lubricants, which are derived from primary fuels.

Accounting for carbon is based mainly on the supply of primary fuels and the net quantities of secondary fuels brought into the country.

To calculate supply of fuels to the country necessitates the following data for each fuel and year chosen:

- the amounts of primary fuels produced (production of secondary fuels is excluded);
- the amounts of primary and secondary fuels imported;
- the amounts of primary and secondary fuels exported;
- the amounts of fuel used for international marine and aviation bunkers (hereafter referred to as bunkers);
- the net increases or decreases in stocks of the fuels.

For each fuel, the production (where appropriate) and imports are added together and the exports, bunkers, and stock changes are subtracted to calculate the apparent consumption of the fuels. In cases where exports of secondary fuels exceed imports or stock increases exceed net imports, negative numbers will result.

The manufacture of secondary fuels is ignored in the main calculation, as the carbon in these fuels has already been accounted for in the supply of primary fuels from which they are derived. However, information on production of some secondary fuel products is required to adjust for carbon stored in these products.

Three other important points influence the accounting methodology:

• **Stored carbon**

Not all fuel supplied to an economy is burned for heat energy. Some is used as a raw material (or feedstock) for manufacture of products such as plastics or in a non-energy use (e.g. bitumen for road construction), without oxidation (emissions) of the carbon. This is called *stored carbon*, and is deducted from the carbon emissions calculation. Estimation of the stored carbon requires data for fuel use by activities using the fuel as raw material.

• **International bunker fuels**

The procedures given for calculating emissions ensure that emissions from the use of fuels for **international** marine and air transport are excluded from national emissions totals. However, for information purposes, the quantities and types of fuels delivered and the corresponding emissions from international marine and aviation bunkers should be separately reported.

• **Biofuels**

In the IPCC methodology, biofuels (fuels derived from biomass) are not included in the CO₂ emissions from fuel combustion and are only shown for informational purposes. This is because for the purpose of calculating CO₂ emissions, biomass consumption for fuel is assumed to equal its regrowth. Any departures from this hypothesis are counted within the land use, land use change and forestry module of the *1996 IPCC Guidelines*. For this reason, emissions from the burning of biomass for energy are not included in the CO₂ emissions from fuel combustion in this publication.

Methodology

The IPCC methodology breaks the calculation of carbon dioxide emissions from fuel combustion into six steps:

- Step 1: Estimate apparent fuel consumption in original units
- Step 2: Convert to a common energy unit
- Step 3: Multiply by emission factors to compute the carbon content
- Step 4: Compute carbon stored
- Step 5: Correct for carbon unoxidised
- Step 6: Convert carbon oxidised to CO₂ emissions

23. The following discussion excludes all non-carbon energy sources such as nuclear, hydro, geothermal, solar, etc.

Completing Worksheet 1

This section is from the Workbook of the *1996 IPCC Guidelines* and provides step-by-step instructions for calculating emissions at the detailed fuels and fuel products level. Worksheet 1 can be consulted at the end of this chapter.

NOTE: The main worksheet allows CO₂ emissions from biofuels to be calculated but it does not include them in the national total.

Step 1 Estimating apparent fuel consumption

1 Apparent consumption is the basis for calculating the carbon supply for the country. To calculate apparent consumption (or total fuel supplied) for each fuel, the following data for primary fuels are entered:

- Production (Column A)
- Imports (Column B)
- Exports (Column C)
- International bunkers (Column D)
- Stock change (Column E)

For secondary fuels and products, the only figures entered are:

- Imports (Column B)
- Exports (Column C)
- International bunkers (Column D)
- Stock change (Column E)

These allow the overall calculation to account for all consumption.

Amounts of all fuels can be expressed in joules (J), megajoules (MJ), gigajoules (GJ), terajoules (TJ) or thousands of tonnes of oil equivalent (ktoe). Solid or liquid fuels can be expressed as thousands of tonnes (kt) and dry natural gas can be expressed as teracalories (Tcal) or cubic metres (m³).

NOTE: The figure for production of natural gas, used in Worksheet 1, **does not** include quantities of gas vented, flared or re-injected into the well.

Quantities are expressed in terms of the net calorific values (NCV) of the fuels concerned. NCV is sometimes referred to as the lower heating value (LHV). NCVs are approximately 95% of the gross calorific value (GCV) for liquid fossil, solid fossil and biofuels, and 90% of the GCV for natural gas.

2 Apparent consumption is calculated for each fuel using this formula:

Apparent consumption =

Production + Imports - Exports - International bunkers - Stock change

The results are entered in Column F.

Particular attention is given to the algebraic sign of “stock change” as it is entered in Column E. When more fuel is added to stock than is taken from it during the year there is a net stock build and the quantity is entered in Column E with a plus sign. In the converse case (a stock draw) the quantity is entered in Column E with a minus sign.

Step 2 Converting to a common energy unit (TJ)

- 1 The conversion factor used for each fuel is entered in Column G.
- 2 The Apparent consumption is multiplied by the relevant conversion factor (NCV or scaling factor) to give apparent consumption in terajoules. The result is entered in Column H.

**TABLE 1
CONVERSION FACTORS**

<i>Unit</i>	<i>Conversion factor</i>
J, MJ or GJ	Number is divided by the appropriate factor, 10 ¹² , 10 ⁶ or 10 ³ respectively, to convert to TJ.
10 ⁶ toe	Number is multiplied by the conversion factor, 41868 TJ/10 ⁶ toe, to convert to TJ.
Tcal	Number is multiplied by the conversion factor, 4.1868 TJ/Tcal.
10 ³ t	The net calorific value of each fuel is used (see Table 2).

TABLE 2	
SELECTED NET CALORIFIC VALUES	
	<i>Factors (TJ/10³ tonnes)</i>
Refined petroleum products	
Gasoline	44.80
Jet kerosene	44.59
Other kerosene	44.75
Shale oil	36.00
Gas/diesel oil	43.33
Fuel oil	40.19
LPG	47.31
Ethane	47.49
Naphtha	45.01
Bitumen	40.19
Lubricants	40.19
Petroleum coke	31.00
Refinery feedstocks	44.80
Refinery gas	48.15
Other oil products	40.19
Other products	
Coal oils and tars derived from coking coals	28.00
Oil shale	9.40
Orimulsion	27.50

NOTE: When converting from 10³ t, for anthracite, coking coal, other bituminous coal, sub-bituminous coal and lignite, separate country-specific net calorific values are used for production (Column A), imports (Column B), and exports (Column C). For these fuels, apparent consumption is calculated by converting production, imports, exports, and stock changes to TJ first. For international bunkers (Column D) and stock change (Column E), either a weighted average net calorific value or a factor appropriate to the dominant source of supply is used.

Step 3 Multiplying by carbon emission factors

- The carbon emission factor (CEF) used to convert apparent consumption into carbon content is entered in Column I.

Table 3 shows the default values used in this publication.

TABLE 3	
CARBON EMISSION FACTORS (CEF)	
<i>Fuel</i>	<i>Carbon emission factor (tC/TJ)</i>
LIQUID FOSSIL	
<i>Primary fuels</i>	
Crude oil	20.0
Orimulsion	22.0
Natural gas liquids	17.2
<i>Secondary fuels/products</i>	
Gasoline	18.9
Jet kerosene	19.5
Other kerosene	19.6
Shale oil	20.0
Gas/diesel oil	20.2
Fuel oil	21.1
LPG	17.2
Ethane	16.8
Naphtha	(20.0) ^(a)
Bitumen	22.0
Lubricants	(20.0) ^(a)
Petroleum coke	27.5
Refinery feedstocks	(20.0) ^(a)
Refinery gas	18.2 ^(b)
Other oil	(20.0) ^(a)
SOLID FOSSIL	
<i>Primary fuels</i>	
Anthracite	26.8
Coking coal	25.8
Other bituminous coal	25.8
Sub-bituminous coal	26.2
Lignite	27.6
Oil shale	29.1
Peat	28.9
<i>Secondary fuels/products</i>	
BKB & patent fuel	(25.8) ^(a)
Coke oven / gas coke	29.5
Coke oven gas	13.0 ^(b)
Blast furnace gas	66.0 ^(b)
GASEOUS FOSSIL	
Natural gas (dry)	15.3
BIOFUELS^(c)	
Solid biofuels	29.9
Liquid biofuels	(20.0) ^(a)
Biogases	(30.6) ^(a)

Notes to Table 3

(a) This value is a default value until a fuel specific CEF is determined. For biogases, the CEF is based on the assumption that 50% of the carbon in the biomass is converted to methane and 50% is emitted as CO₂. The CO₂ emissions from biogases should not be included in national inventories. If biogases are released and not combusted, 50% of the carbon content should be included as methane.

(b) For use in the sectoral calculations.

(c) Emissions from the use of biofuels are not shown in this publication.

- 2 The apparent consumption in TJ (in Column H) is multiplied by the carbon emission factor (in Column I) to give the carbon content in tonnes of C. The result is entered in Column J.
- 3 The carbon content in tonnes C is divided by 10³ to give gigagrammes of carbon. The result is entered in Column K.

Step 4 Calculating carbon stored**1 Estimating fuel quantities***Bitumen and lubricants*

Domestic production for bitumen and lubricants is added to the apparent consumption (shown in Column F of the main Worksheet 1) for these products and the sum is entered in Column A of Auxiliary Worksheet 1.

Coal oils and tars

For coking coal, the default assumption is that 6% of the carbon in coking coal consumed is converted to oils and tars. The apparent consumption for coking coal (from Worksheet 1, Column F) is multiplied by 0.06.

Starting with the 2006 edition, the IEA Secretariat has requested coal tar data on its annual coal questionnaire. In cases where this information has been provided, to be consistent with the 1996 IPCC Guidelines, 75% of the part reported as non-energy was considered to be stored and the default 6% of coking coal was not applied.

Natural gas, LPG, ethane, naphtha and gas/diesel oil

The amount of these fuels used as a feedstock for non-energy purposes is entered in Column A.

2 Converting to TJ

The appropriate conversion factors are inserted in Column B of Auxiliary Worksheet 1. The estimated fuel quantities (Column A) are multiplied by the relevant conversion factor to give the estimated fuel quantities in TJ. The result is entered in Column C.

3 Calculating carbon content

The estimated fuel quantities in TJ (Column C of Auxiliary Worksheet 1) are multiplied by the emission factor in tonnes of carbon per terajoule (Column D) to give the carbon content in tonnes of C (Column E). The figures are divided by 10³ to express the amount as gigagrammes of carbon. The results are entered in Column F.

4 Calculating actual carbon stored

The carbon content (Column F of Auxiliary Worksheet 1) is multiplied by the fraction of carbon stored (Column G) to give the carbon stored. The result is entered in Column H.

When Auxiliary Worksheet 1 is completed

- 5 The values for carbon stored for the relevant fuels/products are entered in Column L of the main Worksheet 1.
- 6 The values for carbon stored (Column L) are subtracted from carbon content (Column K) to give net carbon emissions. The results are entered in Column M.

Step 5 Correcting for carbon unoxidised

- 1 The values for fraction of carbon oxidised are entered in Column N of Worksheet 1. Table 4 provides information on typical values measured from various facilities and suggests global default values for solid, liquid and gaseous fuels.
- 2 Net carbon emissions (Column M) are multiplied by the fraction of carbon oxidised (Column N) and the results are entered in Column O, actual carbon emissions.

TABLE 4
FRACTION OF CARBON OXIDISED

Coal ¹	0.98
Oil and oil products	0.99
Natural gas	0.995
Peat for electricity generation ²	0.99

1. This figure is a global average but varies for different types of coal, and can be as low as 0.91.

2. The fraction for peat used in households may be much lower.

Step 6 Converting to CO₂ emissions

- 1 Actual carbon emissions (Column O) are multiplied by 44/12 (which is the molecular weight ratio of CO₂ to C) to find total carbon dioxide (CO₂) emitted from fuel combustion. The results are entered in Column P.
- 2 The sum is total national emissions of carbon dioxide from fuel combustion. These are the numbers shown for total CO₂ emissions from fuel combustion in this publication.

Sectoral Approach

Introduction

A sectoral breakdown of national CO₂ emissions using the defined IPCC Source/Sink Categories is needed for monitoring and abatement policy discussions. The IPCC Reference Approach provides a rapid estimate of the total CO₂ emissions from fuels supplied to the country but it does not break down the emissions by sector.

The more detailed calculations used for the Sectoral Approach are essentially similar in content to those used for the Reference Approach.

Completing Worksheet 2

This section is from the Workbook of the *1996 IPCC Guidelines* and provides step-by-step instructions for calculating emissions by fuels for each of the main source categories using the IPCC Tier 1 Sectoral Approach. A sample sheet of Worksheet 2 can be consulted at the end of this chapter.

Step 1 Estimating sectoral fuel consumption

The amount of each fuel consumed by sector is entered in Column A.

Energy industries and transformation

Special care needs to be taken when considering the fuel use of energy industries and transformation so that double counting is avoided.

Fuel use in energy industries and transformation can be divided into three groups:

Transformation

- 1 Fuels transformed into secondary fuels by physical or chemical processes not involving combustion (*e.g.* crude oil to petroleum products in refineries, coal to coke and coke oven gas in coke ovens);
- 2 Fuels combusted to generate electricity and/or heat (excluding fuels used for autoproduction of electricity and heat, which are reported in the sector where they are used);

Energy industries

- 3 Fuels combusted by energy industries (for energy extraction and transformation) for heating, pumping, traction and lighting purposes (*e.g.* refinery gas for heating distillation columns, use of colliery methane at mines for heating purposes).

In this worksheet, only fuel use by Groups 2 and 3 (fuels that are combusted) is included. However, see Step 4 for the reporting of lubricants used by energy industries. For emissions resulting from fuel use by Group 1, no worksheets are available. They should be reported under the IPCC Source/Sink Category 1B: fugitive emissions from fuels. It is most important that this distinction be appreciated. The quantities of *primary* fuels reported in Column A will understate the quantities used for Group 1 activities. The reported quantities cover only the combustion needs of these industries.

Step 2 Converting to a common energy unit (TJ)

- 1 The conversion factor (NCV or scaling factor) to convert to terajoules is entered in Column B.
- 2 The consumption is multiplied by the relevant conversion factor to give consumption in terajoules. The result is entered in Column C.

Step 3 Multiplying by carbon emission factors

- 1 The carbon emission factor used to convert consumption into carbon content is entered in Column D.
- 2 The consumption in TJ (in Column C) is multiplied by the carbon emission factor (in Column D) to give the carbon content in tonnes of carbon. The result is entered in Column E.

- 3 The carbon content in tonnes of carbon is divided by 10^3 to be expressed as gigagrammes of carbon. The result is entered in Column F.

Step 4 Calculating carbon stored

For the calculation of carbon stored, fuels are distinguished into four groups:

- Fuels used as feedstocks, such as naphtha, natural gas, gas/diesel oil, LPG or ethane;
- Lubricants;
- Bitumen and coal tars;
- Fuels for which no carbon is stored.

Fuels used as feedstocks, such as naphtha, natural gas, gas/diesel oil, LPG or ethane:

This subsection on feedstocks applies only to the industry source category.

1 Estimating fuel quantities

The amount of fuel used as a feedstock for non-energy purposes is entered in Column A of Auxiliary Worksheet 2.

2 Converting to TJ

The appropriate conversion factor is inserted in Column B. Feedstock use (Column A) is multiplied by the relevant conversion factor to give the feedstock use in TJ. The result is entered in Column C of Auxiliary Worksheet 2.

3 Calculating carbon content

The feedstock use in TJ (Column C) is multiplied by the emission factor in tonnes of carbon per terajoule (Column D) to give the carbon content in tonnes C (Column E). The figures are divided by 10^3 to express the amount as gigagrammes of carbon. The results are entered in Column F of Auxiliary Worksheet 2.

4 Calculating actual carbon stored

The carbon content (Column F) is multiplied by the fraction of carbon stored (Column G) to give the carbon stored. The result is entered in Column H of Auxiliary Worksheet 2.

After completion of Auxiliary Worksheet 2

- 5 The amount of carbon stored for the relevant fuel/product is entered in Column H of Worksheet 2 for the industry source category.
- 6 The amount of carbon stored (Column H) is subtracted from the carbon content (Column F) to give net carbon emissions. The results are entered in Column I.

Lubricants:

It has been estimated that during the first use, recycling and final disappearance of lubricants, approximately half of the production is oxidised as CO₂.

- 1 For each sector where lubricants are used, the fraction of carbon stored for lubricants is entered in Column G. The default value of 0.5 is used for this publication.
- 2 The carbon content (Column F) is multiplied by the fraction of carbon stored (Column G) to obtain the amount of carbon stored. The result is entered in Column H.
- 3 The amount of carbon stored (Column H) is subtracted from the carbon content (Column F) to obtain the net carbon emissions. The result is entered in Column I.

Bitumen and coal tars:

Bitumen and coal tars are usually not combusted but used in a manner that stores almost all of the carbon. Emissions of non-methane volatile organic compounds (NMVOCs) from the use of bitumen for road paving are estimated in the industrial processes chapter.

Fuels for which no carbon is stored:

Step 4 is skipped and the values from Column F are entered in Column I before continuing with Step 5.

Step 5 Correcting for carbon unoxidised

- 1 Values for fraction of carbon oxidised are entered in Column J of Worksheet 2. Table 4 provides information on typical values measured from coal facilities and suggests global default values for solid, liquid and gaseous fuels.
- 2 Net carbon emissions (Column I) are multiplied by fraction of carbon oxidised (Column J) and the results are entered in Column K, actual carbon emissions.

Step 6 Converting to CO₂ emissions

- 1 Actual carbon emissions (Column K) are multiplied by 44/12 (which is the molecular weight ratio of CO₂ to C) to find actual carbon dioxide (CO₂) emissions. The results are entered in Column L and correspond to the sectoral emissions included in the present publication.

MODULE		ENERGY					
SUBMODULE		CO ₂ FROM ENERGY SOURCES (REFERENCE APPROACH)					
WORKSHEET		1					
SHEET		1 OF 5					
		STEP 1					
		A	B	C	D	E	F
		Production	Imports	Exports	International Bunkers	Stock Change	Apparent Consumption
FUEL TYPES							F=(A+B-C-D-E)
Liquid Fossil	Primary Fuels	Crude Oil					
		Orimulsion					
		Natural Gas Liquids					
	Secondary Fuels	Gasoline					
		Jet Kerosene					
		Other Kerosene					
		Shale Oil					
		Gas / Diesel Oil					
		Fuel Oil					
		LPG					
		Ethane					
		Naphtha					
		Bitumen					
		Lubricants					
		Petroleum Coke					
Refinery Feedstocks							
Other Oil							
Liquid Fossil Totals							
Solid Fossil	Primary Fuels	Anthracite ^(a)					
		Coking Coal					
		Other Bit. Coal					
		Sub-Bit. Coal					
		Lignite					
		Oil Shale					
		Peat					
	Secondary Fuels	BKB & Patent Fuel					
		Coke Oven/Gas Coke					
Solid Fossil Totals							
Gaseous Fossil	Natural Gas (Dry)						
Total							
Biofuels Total							
	Solid Biofuels						
	Liquid Biofuels						
	Biogases						

(a) If anthracite is not separately available, include with other bituminous coal.

MODULE		ENERGY				
SUBMODULE		CO ₂ FROM ENERGY SOURCES (REFERENCE APPROACH)				
WORKSHEET		1				
SHEET		2 OF 5				
		STEP 2			STEP 3	
		G(a) Conversion Factor (TJ/Unit)	H Apparent Consumption (TJ)	I Carbon Emission Factor (tC/TJ)	J Carbon Content (tC)	K Carbon Content (GgC)
FUEL TYPES			H=(FxG)		J=(HxI)	K=(Jx10 ⁻³)
Liquid Fossil	Primary Fuels	Crude Oil				
		Orimulsion				
		Natural Gas Liquids				
	Secondary Fuels	Gasoline				
		Jet Kerosene				
		Other Kerosene				
		Shale Oil				
		Gas / Diesel Oil				
		Fuel Oil				
		LPG				
		Ethane				
		Naphtha				
		Bitumen				
		Lubricants				
		Petroleum Coke				
Refinery Feedstocks						
Other Oil						
Liquid Fossil Totals						
Solid Fossil	Primary Fuels	Anthracite ^(b)				
		Coking Coal				
		Other Bit. Coal				
		Sub-Bit. Coal				
		Lignite				
		Oil Shale				
		Peat				
	Secondary Fuels	BKB & Patent Fuel				
		Coke Oven/Gas Coke				
Solid Fossil Totals						
Gaseous Fossil	Natural Gas (Dry)					
Total						
Biofuels Total						
	Solid Biofuels					
	Liquid Biofuels					
	Biogases					

(a) Please specify units.

(b) If anthracite is not separately available, include with other bituminous coal.

MODULE			ENERGY				
SUBMODULE			CO ₂ FROM ENERGY SOURCES (REFERENCE APPROACH)				
WORKSHEET			1				
SHEET			3 OF 5				
			STEP 4		STEP 5		STEP 6
			L Carbon Stored (GgC)	M Net Carbon Emissions (GgC)	N Fraction of Carbon Oxidised	O Actual Carbon Emissions (GgC)	P Actual CO ₂ Emissions (GgCO ₂)
FUEL TYPES				M=(K-L)		O=(MxN)	P=(Ox[44/12])
Liquid Fossil	Primary Fuels	Crude Oil					
		Orimulsion					
		Natural Gas Liquids					
	Secondary Fuels	Gasoline					
		Jet Kerosene					
		Other Kerosene					
		Shale Oil					
		Gas / Diesel Oil					
		Fuel Oil					
		LPG					
		Ethane					
		Naphtha					
		Bitumen					
		Lubricants					
		Petroleum Coke					
		Refinery Feedstocks					
Other Oil							
Liquid Fossil Totals							
Solid Fossil	Primary Fuels	Anthracite ^(a)					
		Coking Coal					
		Other Bit. Coal					
		Sub-Bit. Coal					
		Lignite					
		Oil Shale					
		Peat					
	Secondary Fuels	BKB & Patent Fuel					
		Coke Oven/Gas Coke					
Solid Fossil Totals							
Gaseous Fossil		Natural Gas (Dry)					
Total							
Biofuels Total							
	Solid Biofuels						
	Liquid Biofuels						
	Biogases						

(a) If anthracite is not separately available, include with other bituminous coal.

MODULE		ENERGY					
SUBMODULE		CO ₂ FROM ENERGY SOURCES (REFERENCE APPROACH)					
WORKSHEET		1					
SHEET		4 OF 5 EMISSIONS FROM INTERNATIONAL BUNKERS (INTERNATIONAL MARINE AND AIR TRANSPORT)					
		STEP 1	STEP 2		STEP 3		
		A Quantities Delivered ^(a)	B Conversion Factor (TJ/unit)	C Quantities Delivered (TJ)	D Carbon Emission Factor (tC/TJ)	E Carbon Content (tC)	F Carbon Content (GgC)
FUEL TYPES				$C=(A \times B)$		$E=(C \times D)$	$F=(E \times 10^{-3})$
Solid Fossil	Other Bituminous Coal						
	Sub-Bituminous Coal						
Liquid Fossil	Gasoline						
	Jet Kerosene						
	Gas/Diesel Oil						
	Fuel Oil						
	Lubricants						
		Total					

(a) Enter the quantities from Worksheet 1, Sheet 1, Column D: "International Bunkers".

MODULE		ENERGY					
SUBMODULE		CO ₂ FROM ENERGY SOURCES (REFERENCE APPROACH)					
WORKSHEET		1					
SHEET		5 OF 5 EMISSIONS FROM INTERNATIONAL BUNKERS (INTERNATIONAL MARINE AND AIR TRANSPORT)					
		STEP 4			STEP 5		STEP 6
		G Fraction of Carbon Stored	H Carbon Stored (GgC)	I Net Carbon Emissions (GgC)	J Fraction of Carbon Oxidised	K Actual Carbon Emissions (GgC)	L Actual CO ₂ Emissions (GgCO ₂)
FUEL TYPES			$H=(F \times G)$	$I=(F-H)$		$K=(I \times J)$	$L=(K \times 44/12)$
Solid Fossil	Other Bituminous Coal	0	0				
	Sub-Bituminous Coal	0	0				
Liquid Fossil	Gasoline	0	0				
	Jet Kerosene	0	0				
	Gas/Diesel Oil	0	0				
	Fuel Oil	0	0				
	Lubricants	0.5					
		Total ^(a)					

(a) The bunker emissions are not to be added to national totals.

MODULE		ENERGY						
SUBMODULE		CO ₂ FROM ENERGY						
WORKSHEET		AUXILIARY WORKSHEET 1: ESTIMATING CARBON STORED IN PRODUCTS						
SHEET		1 OF 1						
	A	B	C	D	E	F	G	H
	Estimated Fuel Quantities	Conversion Factor (TJ/Units)	Estimated Fuel Quantities (TJ)	Carbon Emission Factor (tC/TJ)	Carbon Content (tC)	Carbon Content (GgC)	Fraction of Carbon Stored	Carbon Stored (GgC)
FUEL TYPES			$C=(A \times B)$		$E=(C \times D)$	$F=(E \times 10^{-3})$		$H=(F \times G)$
Naphtha ^(a)							0.80	
Lubricants							0.50	
Bitumen							1.0	
Coal Oils and Tars (from Coking Coal)							0.75	
Natural Gas ^(a)							0.33	
Gas/Diesel Oil ^(a)							0.50	
LPG ^(a)							0.80	
Ethane ^(a)							0.80	
Other fuels ^(b)								

(a) Enter these fuels when they are used as feedstocks.

(b) Use the other fuels rows to enter any other products in which carbon may be stored.

MODULE	ENERGY					
SUBMODULE	CO₂ FROM FUEL COMBUSTION (TIER I SECTORAL APPROACH)					
WORKSHEET	2 STEP BY STEP CALCULATIONS					
SHEET	SAMPLE SHEET - FILLED OUT FOR EACH SECTOR					
Energy Industries	A Consumption	B Conversion Factor (TJ/unit)	C Consumption (TJ)	D Carbon Emission Factor (tC/TJ)	E Carbon Content (tC)	F Carbon Content (GgC)
<i>specific fuels listed for each sector (a)</i>			C=(AxB)		E=(CxD)	F=(E x 10 ⁻³)
	Total					
Memo items:						
Wood/Wood Waste						
Charcoal						
Other Solid Biofuels						
Liquid Biofuels						
Biogases						
	Total Biomass					

(a) Certain sectors have specific calculations for some products. See the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* for further details.

MODULE	ENERGY					
SUBMODULE	CO₂ FROM FUEL COMBUSTION (TIER I SECTORAL APPROACH)					
WORKSHEET	2 STEP BY STEP CALCULATIONS					
SHEET	SAMPLE SHEET - FILLED OUT FOR EACH SECTOR					
Energy Industries	G Fraction of Carbon Stored	H Carbon Stored (GgC)	I Net Carbon Emissions (GgC)	J Fraction of Carbon Oxidised	K Actual Carbon Emissions (GgC)	L Actual CO ₂ Emissions (GgCO ₂)
<i>specific fuels listed for each sector (a)</i>		H=(FxG)	I=(F-H)		K=(IxJ)	L=(K x [44/12])
	Total					
<i>Memo items:</i>						
Wood/Wood Waste						
Charcoal						
Other Solid Biofuels						
Liquid Biofuels						
Biogases						
	Total Biomass					

(a) Certain sectors have specific calculations for some products. See the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* for further details.

MODULE	ENERGY							
SUBMODULE	CO ₂ FROM FUEL COMBUSTION BY (TIER I SECTORAL APPROACH)							
WORKSHEET	AUXILIARY WORKSHEET 2: ESTIMATING CARBON STORED IN PRODUCTS							
SHEET	1							
	A Feedstock Use	B Conversion Factor (TJ/Units)	C Feedstock Use (TJ)	D Carbon Emission Factor (tC/TJ)	E Carbon Content (tC)	F Carbon Content (GgC)	G Fraction of Carbon Stored	H Carbon Stored ^(a) (GgC)
FUEL TYPES			$C=(A \times B)$		$E=(C \times D)$	$F=(E \times 10^{-3})$		$H=(F \times G)$
Gas/Diesel Oil							0.5	
LPG							0.8	
Ethane							0.8	
Naphtha							0.8	
Natural Gas							0.33	
Other Fuels ^(b)								

(a) Enter the result of this calculation in Worksheet 2 Step by Step Calculation, in the *manufacturing industries and construction* sector.

(b) Please specify.

Key sources

In May 2000, the IPCC Plenary, at its 16th session held in Montreal, accepted the report on *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*.²⁴ The report provides good practice guidance to assist countries in producing inventories that are neither over nor underestimates so far as can be judged, and in which uncertainties are reduced as far as practicable. It supports the development of inventories that are transparent, documented, consistent over time, complete, comparable, assessed for uncertainties, subject to quality control and quality assurance, and efficient in the use of resources. The report does not revise or replace the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, but provides a reference that complements and is consistent with those guidelines.

Methodological choice for individual source categories is important in managing overall inventory uncertainty. Generally, inventory uncertainty is lower when emissions are estimated using the most rigorous methods, but due to finite resources, this may not be feasible for every source category. To make the most efficient use of available resources, it is good practice to identify those source categories that have the greatest contribution to overall inventory uncertainty. By identifying these key source categories in the national inventory, inventory agencies can prioritise their efforts and improve their overall estimates. Such a process will lead to improved inventory quality, as well as greater confidence in the resulting emissions estimates. It is good practice for each inventory agency to identify its national key source categories in a systematic and objective manner.

A key source category is one that is prioritised within the national inventory system because its estimate has a significant influence on a country's total inventory of direct greenhouse gases in terms of the absolute level of emissions, the trend in emissions, or both.

Any inventory agency that has prepared an emissions inventory will be able to identify key source categories

in terms of their contribution to the absolute level of national emissions. For those inventory agencies that have prepared a time series, the quantitative determination of key source categories should include evaluation of both the absolute level and the trend in emissions. Evaluating only the influence of a source category on the overall level of emissions provides limited information about why the source category is key. Some key source categories may not be identified if the influence of their trend is not taken into account.

The *Good Practice Guidance* describes both a basic Tier 1 approach and a Tier 2 approach. The basic difference between the two approaches is that the Tier 2 approach accounts for uncertainty.

In each country's national inventory, certain source categories are particularly significant in terms of their contribution to the overall uncertainty of the inventory. It is important to identify these key source categories so that the resources available for inventory preparation may be prioritised and the best possible estimates prepared for the most significant source categories.

The results of the key source category determination will be most useful if the analysis is done at the appropriate level of detail. The *Good Practice Guidance* suggests at which levels of details the various IPCC Source Categories should be analysed. For example, the combustion of fossil fuels is a large emission source category that can be broken down into sub-source categories, and even to the level of individual plants or boilers. The following guidance describes good practice in determining the appropriate level of analysis to identify key source categories:

- The analysis should be performed at the level of IPCC source categories (*i.e.* at the level at which the IPCC methods are described). The analysis should be performed using CO₂-equivalent emissions calculated using the global warming potentials (GWPs) specified for the preparation of national GHG inventories by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories (*UNFCCC Guidelines*).
- Each greenhouse gas emitted from a single source category should be considered separately, unless there are specific methodological reasons for treating gases collectively. For example, carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) are

24. The report on *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* is available from the IPCC Greenhouse Gas Inventories Programme (www.ipcc-nggip.iges.or.jp).

emitted from mobile sources. The key source category evaluation should be performed for each of these gases separately because methods, emission factors and related uncertainties differ for each gas. In contrast, a collective evaluation of hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) may be appropriate for some source categories, such as emissions from substitutes for Ozone Depleting Substances (ODS substitutes).

- Source categories that use the same emission factors based on common assumptions should be aggregated before analysis. This approach can also help deal with cross-correlations between source categories in the uncertainty analysis. The same pattern of aggregation should be used both to quantify uncertainties and to identify key source categories unless the associated activity data uncertainties are very different.

Quantitative approaches to identify key source categories

It is good practice for each inventory agency to identify its national key source categories in a systematic and objective manner, by performing a quantitative analysis of the relationships between the level and the trend of each source category's emissions and total national emissions.

Any inventory agency that has developed an emissions inventory will be able to perform the Tier 1 Level Assessment and identify the source categories whose level has a significant effect on total national emissions. Those inventory agencies that have developed emissions inventories for more than one year will also be able to perform the Tier 1 Trend Assessment and identify sources that are key because of their contribution to the total trend of national emissions. Both assessments are described in detail in the *Good Practice Guidance*.

For CO₂ emissions from stationary combustion, the *Good Practice Guidance* suggests that the emissions be disaggregated to the level where emission factors are distinguished. In most inventories, this will be the main fuel types. If emission factors are determined independently for some sub-source categories, these should be distinguished in the analysis.

When using the Tier 1 approach, key source categories are identified using a pre-determined cumulative emissions threshold. The pre-determined threshold is

based on an evaluation of several inventories, and is aimed at establishing a general level where 90% of inventory uncertainty will be covered by key source categories.

The Tier 1 method to identify key source categories of the national emissions inventory assesses the impacts of various source categories on the level and, if possible, on the trend. When national inventory estimates are available for several years, it is good practice to assess the contribution of each source category to both the level and trend of the national inventory. If only a single year's inventory is available, only a Level Assessment can be performed.

For the **Tier 1 Level Assessment**, the contribution of each source category to the total national inventory level is calculated according to Equation 1:

EQUATION 1

Source Category Level Assessment =
Source Category Estimate / Total Estimate

$$L_{x,t} = E_{x,t} / E_t$$

Where:

$L_{x,t}$ is the Level Assessment for source x in year t

Source category estimate ($E_{x,t}$) is the emission estimate of source category x in year t

Total estimate (E_t) is the total inventory estimate in year t

The value of the source category Level Assessment should be calculated separately for each source category, and the cumulative sum of all the entries is calculated. Key source categories are those that, when summed together in descending order of magnitude, add up to over 95% of the total. Any source category that meets the 95% threshold in any year should be identified as a key source category.

The **Tier 1 Trend Assessment** calculates the contribution of each source category trend to the trend in the total national inventory. This assessment will identify source categories that have a different trend to the trend of the overall inventory. As differences in trend are more significant to the overall inventory level for larger source categories, the result of the trend difference (*i.e.* the source category trend minus

total trend) is multiplied by the result of the level assessment ($L_{x,t}$ from Equation 1) to provide appropriate weighting. Thus, key source categories will be those where the source category trend diverges significantly from the total trend, weighted by the emission level of the source category.

If nationally derived source-level uncertainties are available, inventory agencies can use **Tier 2** to identify

key source categories. The Tier 2 approach is a more detailed analysis that builds on the Tier 1 approach, and it is likely to reduce the number of key source categories. Under Tier 2, the results of the Tier 1 analysis are multiplied by the relative uncertainty of each source category. In this case, the pre-determined threshold applies to the cumulative uncertainty and not to the cumulative emissions. Key source categories are those that together represent 90% of total uncertainty.

PART II:

CO₂ EMISSIONS FROM FUEL COMBUSTION

SUMMARY TABLES

CO₂ emissions: Sectoral Approach

 million tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World *	14 079.8	15 685.0	18 061.0	18 641.4	20 988.7	21 851.0	23 758.6	27 501.4	28 966.4	30 509.4	31 342.3	49.3%
<i>Annex I Parties</i>	..	..	..	..	13 900.6	13 152.4	13 744.5	14 117.5	12 932.6	13 465.9	13 354.9	-3.9%
<i>Annex II Parties</i>	8 607.3	8 884.9	9 544.3	9 172.6	9 794.8	10 191.9	10 996.5	11 296.4	10 211.3	10 586.0	10 363.0	5.8%
<i>North America</i>	4 630.9	4 738.8	5 088.5	4 948.0	5 296.9	5 599.6	6 227.7	6 326.9	5 704.4	5 957.3	5 817.0	9.8%
<i>Europe</i>	3 059.8	3 092.8	3 350.7	3 105.9	3 154.1	3 139.7	3 223.3	3 342.4	2 982.1	3 063.6	2 932.8	-7.0%
<i>Asia Oceania</i>	916.7	1 053.4	1 105.1	1 118.7	1 343.9	1 452.6	1 545.5	1 627.1	1 524.8	1 565.0	1 613.1	20.0%
<i>Annex I EIT</i>	..	..	..	..	3 976.6	2 805.5	2 545.3	2 602.0	2 462.5	2 611.6	2 703.7	-32.0%
<i>Non-Annex I Parties</i>	..	..	..	..	6 469.4	7 989.3	9 177.7	12 410.4	15 010.1	15 947.1	16 873.7	160.8%
<i>Annex I Kyoto Parties</i>	..	..	..	..	8 778.3	7 797.3	7 784.9	8 064.7	7 426.8	7 703.1	7 713.5	-12.1%
Intl. marine bunkers	344.8	332.4	348.4	298.3	362.3	421.0	486.0	557.3	593.2	643.9	645.1	78.1%
Intl. aviation bunkers	167.3	171.8	199.8	222.6	256.4	288.2	350.4	416.1	430.5	452.5	468.5	82.7%
Non-OECD Total **	4 197.6	5 381.7	6 802.3	7 676.6	9 219.3	9 473.4	10 297.1	13 504.0	15 921.6	16 903.0	17 887.9	94.0%
OECD Total ***	9 370.1	9 799.1	10 710.4	10 443.9	11 150.7	11 668.4	12 625.1	13 024.0	12 021.1	12 510.0	12 340.8	10.7%
Canada	339.6	377.9	426.9	402.2	428.2	460.9	529.5	555.2	519.5	528.0	529.8	23.7%
Chile	20.8	17.0	21.2	19.4	31.0	38.9	52.5	58.2	65.4	69.8	76.3	145.8%
Mexico	97.1	138.8	212.1	251.6	265.3	297.0	349.6	385.8	399.9	417.9	432.3	63.0%
United States	4 291.3	4 360.8	4 661.6	4 545.7	4 868.7	5 138.7	5 698.1	5 771.7	5 184.9	5 429.4	5 287.2	8.6%
OECD Americas	4 748.8	4 894.6	5 321.8	5 219.0	5 593.2	5 935.5	6 629.8	6 770.8	6 169.7	6 445.0	6 325.6	13.1%
Australia	144.1	180.0	208.0	221.0	260.0	285.4	338.8	380.2	404.6	396.0	396.8	52.6%
Israel	14.4	17.1	19.6	24.5	33.5	46.3	55.2	58.7	63.5	68.1	67.2	100.5%
Japan	758.8	856.3	880.7	878.1	1 061.6	1 141.9	1 175.8	1 213.0	1 089.1	1 138.0	1 186.0	11.7%
Korea	52.1	76.8	124.4	153.3	229.3	358.7	437.7	469.1	515.6	564.5	587.7	156.3%
New Zealand	13.7	17.1	16.4	19.6	22.3	25.3	30.9	33.9	31.2	31.0	30.3	35.8%
OECD Asia Oceania	983.1	1 147.2	1 249.1	1 296.5	1 606.7	1 857.5	2 038.4	2 154.9	2 104.0	2 197.5	2 268.1	41.2%
Austria	48.7	50.2	55.7	54.3	56.4	59.4	61.7	74.7	64.2	70.1	68.5	21.4%
Belgium	116.8	115.6	125.7	101.9	107.9	115.2	118.6	113.0	100.9	108.0	108.6	0.6%
Czech Republic	151.0	152.6	165.8	173.1	155.1	123.7	121.9	119.6	110.1	114.4	112.7	-27.4%
Denmark	55.0	52.5	62.5	60.5	50.6	58.1	50.8	48.4	46.9	47.0	41.7	-17.7%
Estonia	..	..	..	..	36.1	16.1	14.6	16.9	14.7	18.5	19.3	-46.5%
Finland	39.8	44.4	55.2	48.6	54.4	56.0	55.4	55.3	55.1	63.2	55.6	2.2%
France	431.9	430.6	461.4	360.3	352.6	354.2	378.7	388.3	349.4	356.7	328.3	-6.9%
Germany	978.6	975.5	1 055.6	1 014.6	949.7	867.8	825.0	800.2	737.0	769.0	747.6	-21.3%
Greece	25.2	34.5	45.3	54.6	70.1	75.8	87.4	95.0	90.2	84.2	83.6	19.3%
Hungary	60.3	70.7	83.7	80.8	66.4	57.3	54.2	56.4	48.2	48.9	47.4	-28.6%
Iceland	1.4	1.6	1.7	1.6	1.9	2.0	2.1	2.2	2.1	1.9	1.9	-1.7%
Ireland	21.7	21.1	25.9	26.4	30.5	33.0	41.1	44.0	39.3	38.9	34.9	14.6%
Italy	292.9	319.6	359.8	347.5	397.4	409.4	426.0	460.8	389.4	398.5	393.0	-1.1%
Luxembourg	15.4	12.1	11.9	9.9	10.4	8.0	8.0	11.4	10.0	10.6	10.4	0.7%
Netherlands	129.6	140.8	166.7	154.0	155.8	170.9	172.1	182.7	176.1	187.0	174.5	12.0%
Norway	23.5	24.1	28.0	27.2	28.3	32.8	33.6	36.4	37.1	39.4	38.1	34.7%
Poland	286.7	338.2	413.1	419.5	342.1	331.1	290.9	292.9	287.3	305.6	300.0	-12.3%
Portugal	14.4	18.1	23.8	24.6	39.3	48.3	59.4	62.8	53.1	48.1	48.1	22.4%
Slovak Republic	39.1	43.8	55.3	54.4	56.7	40.8	37.4	38.1	33.5	35.2	33.9	-40.3%
Slovenia	..	..	..	..	13.3	14.0	14.1	15.6	15.2	15.3	15.3	14.4%
Spain	119.9	156.5	187.7	175.2	205.2	232.7	283.9	339.4	282.5	267.9	270.3	31.7%
Sweden	82.4	79.4	73.4	58.8	52.8	57.5	52.8	50.3	41.8	47.2	44.9	-14.9%
Switzerland	38.9	36.7	39.2	41.4	41.6	41.8	42.5	44.6	42.4	43.8	39.9	-4.2%
Turkey	41.4	59.2	70.9	94.6	126.9	152.7	200.6	216.4	256.3	265.9	285.7	125.1%
United Kingdom	623.5	579.5	571.1	544.5	549.3	516.6	524.3	532.9	464.8	482.2	443.0	-19.3%
OECD Europe ***	3 638.2	3 757.3	4 139.5	3 928.4	3 950.8	3 875.4	3 956.9	4 098.2	3 747.4	3 867.5	3 747.1	-5.2%
<i>European Union - 27</i>	..	..	..	..	4 052.5	3 847.3	3 833.8	3 970.8	3 560.3	3 667.4	3 542.7	-12.6%

* Total world includes non-OECD total, OECD total as well as international marine bunkers and international aviation bunkers.

** Includes Estonia and Slovenia prior to 1990.

*** Excludes Estonia and Slovenia prior to 1990.

CO₂ emissions: Sectoral Approachmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	4 197.6	5 381.7	6 802.3	7 676.6	9 219.3	9 473.4	10 297.1	13 504.0	15 921.6	16 903.0	17 887.9	94.0%
Albania	3.9	4.5	7.6	7.2	6.2	1.9	3.1	4.0	3.5	3.7	3.9	-38.0%
Armenia	..	..	..	..	20.5	3.4	3.4	4.1	4.3	4.0	4.7	-77.2%
Azerbaijan	..	..	..	..	55.0	33.9	27.9	30.8	24.8	23.8	26.8	-51.3%
Belarus	..	..	..	..	124.4	61.4	58.7	62.1	62.2	65.1	66.0	-46.9%
Bosnia and Herzegovina	..	..	..	..	23.7	3.2	13.5	15.6	19.7	20.0	22.8	-3.6%
Bulgaria	62.8	72.2	83.8	81.1	74.9	53.3	42.1	46.1	42.4	44.4	49.2	-34.3%
Croatia	..	..	..	..	21.5	15.8	17.7	20.7	19.8	19.0	18.8	-12.7%
Cyprus **	1.8	1.7	2.6	2.8	3.9	5.0	6.3	7.0	7.5	7.2	6.9	79.6%
Georgia	..	..	..	..	33.2	8.1	4.6	4.3	5.4	4.9	6.3	-81.2%
Gibraltar	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.5	0.5	0.5	195.4%
Kazakhstan	..	..	..	..	236.4	167.5	113.0	157.1	199.4	233.7	234.2	-0.9%
Kosovo ***	..	..	..	..	..	..	5.0	6.5	8.3	8.6	8.5	..
Kyrgyzstan	..	..	..	..	22.5	4.4	4.4	4.9	5.2	6.3	6.7	-70.3%
Latvia	..	..	..	..	18.6	8.8	6.8	7.6	7.2	8.1	7.6	-59.3%
Lithuania	..	..	..	..	33.1	14.2	11.2	13.5	12.4	13.3	13.2	-60.1%
FYR of Macedonia	..	..	..	..	8.5	8.2	8.4	8.8	8.4	8.2	9.1	6.5%
Malta	0.6	0.6	1.0	1.1	2.3	2.4	2.1	2.7	2.5	2.5	2.5	8.2%
Republic of Moldova	..	..	..	..	30.2	11.8	6.5	7.7	7.3	7.9	7.9	-73.9%
Montenegro ***	..	..	..	..	..	..	..	1.7	1.6	2.5	2.5	..
Romania	114.9	140.6	176.1	173.3	167.5	117.5	87.0	95.2	78.8	75.5	81.8	-51.2%
Russian Federation	..	..	..	..	2 178.8	1 558.7	1 496.7	1 511.8	1 478.4	1 576.6	1 653.2	-24.1%
Serbia ***	..	..	..	..	61.4	44.0	42.5	49.2	45.3	45.8	49.8	-18.9%
Tajikistan	..	..	..	..	10.9	2.4	2.2	2.3	2.8	2.9	3.0	-72.6%
Turkmenistan	..	..	..	..	44.5	33.2	36.6	47.8	49.7	56.6	61.5	38.4%
Ukraine	..	..	..	..	687.9	392.8	292.0	305.6	252.5	271.6	285.4	-58.5%
Uzbekistan	..	..	..	..	119.8	101.6	118.0	108.5	104.1	101.4	110.2	-8.0%
Former Soviet Union ****	1 995.8	2 567.9	3 056.0	3 197.5	..	..	..	..	..	..	..	..
Former Yugoslavia ****	63.2	75.2	87.6	121.7	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	2 243.2	2 862.7	3 414.8	3 584.8	3 985.9	2 653.8	2 410.1	2 526.1	2 453.7	2 614.2	2 742.8	-31.2%
Algeria	8.9	14.0	28.4	43.4	52.7	56.7	63.5	79.4	96.7	97.8	103.9	97.0%
Angola	1.7	2.0	2.7	2.9	4.0	4.0	5.1	7.2	14.1	15.7	15.7	292.0%
Benin	0.3	0.5	0.4	0.5	0.3	0.2	1.4	2.7	4.2	4.5	4.7	+
Botswana	..	..	..	1.6	2.9	3.3	4.2	4.4	4.3	5.0	4.7	60.0%
Cameroon	0.7	1.0	1.7	2.4	2.7	2.5	2.8	2.9	4.8	5.0	5.1	91.1%
Congo	0.6	0.6	0.7	0.8	0.6	0.5	0.5	0.8	1.5	1.8	2.1	232.7%
Dem. Rep. of Congo	2.5	2.6	3.1	3.2	3.0	2.1	1.7	2.3	2.9	3.1	3.3	10.4%
Côte d'Ivoire	2.4	3.0	3.4	3.0	2.6	3.2	6.1	5.8	6.2	6.2	5.9	123.8%
Egypt	20.3	25.6	41.9	64.8	78.4	83.1	101.3	152.7	172.8	178.4	188.4	140.3%
Eritrea	..	..	..	..	..	0.8	0.6	0.6	0.4	0.5	0.5	..
Ethiopia	1.3	1.2	1.4	1.4	2.2	2.4	3.2	4.5	5.8	5.5	5.9	165.1%
Gabon	0.5	0.7	1.3	1.7	0.9	1.3	1.4	1.7	2.1	2.2	2.2	141.4%
Ghana	1.9	2.3	2.3	2.2	2.7	3.3	5.1	6.4	9.1	10.3	10.8	299.4%
Kenya	3.2	3.5	4.5	4.6	5.5	5.8	7.8	7.6	10.7	11.5	11.6	111.4%
Libya	3.7	9.2	18.6	22.5	27.4	35.1	39.5	45.1	52.3	55.6	34.9	27.6%
Morocco	6.8	9.9	14.0	16.5	19.6	26.0	29.4	39.5	42.7	46.1	50.2	155.4%
Mozambique	2.9	2.3	2.3	1.5	1.1	1.1	1.3	1.5	2.2	2.5	2.8	163.0%
Namibia	..	..	..	..	..	1.7	1.8	2.5	3.0	3.1	3.1	..
Nigeria	5.9	11.7	26.7	32.4	29.2	31.1	42.0	55.2	42.4	51.9	52.8	81.3%
Senegal	1.2	1.6	2.0	2.1	2.1	2.5	3.6	4.7	5.4	5.6	5.7	166.7%
South Africa	156.7	201.5	208.8	228.8	253.7	274.5	296.7	329.2	364.3	370.6	367.6	44.9%
Sudan	3.3	3.3	3.7	4.2	5.5	4.6	5.9	9.7	15.0	15.3	14.5	163.6%
United Rep. of Tanzania	1.5	1.5	1.6	1.5	1.7	2.5	2.6	5.0	5.4	5.8	6.3	267.1%
Togo	0.3	0.3	0.4	0.3	0.6	0.6	1.0	1.0	1.1	1.2	1.2	118.7%
Tunisia	3.7	4.8	7.8	9.6	12.1	14.2	18.0	20.2	21.3	21.9	21.1	74.9%
Zambia	3.4	4.4	3.4	2.8	2.6	2.0	1.7	2.1	1.7	1.7	2.1	-19.3%
Zimbabwe	7.2	7.2	8.0	9.6	16.0	14.8	12.6	10.3	7.9	8.7	9.5	-40.9%
Other Africa	7.6	9.2	13.1	11.7	14.4	16.7	19.7	23.8	27.6	29.7	31.2	115.7%
Africa	248.7	324.2	401.9	475.9	544.5	596.8	680.5	828.7	927.8	967.2	967.8	77.7%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

CO₂ emissions: Sectoral Approachmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	3.2	4.7	7.2	8.8	13.6	20.5	25.3	36.8	50.2	53.3	54.1	298.9%
Brunei Darussalam	0.4	1.4	2.6	2.9	3.2	4.5	4.4	4.8	7.4	7.9	8.9	174.2%
Cambodia	..	..	..	..	..	1.5	2.0	2.6	3.6	3.8	4.0	..
Chinese Taipei	31.0	42.5	72.9	71.4	114.4	158.2	218.4	262.5	250.5	270.2	264.7	131.4%
India	200.2	241.2	283.3	411.0	582.3	776.5	972.1	1 164.4	1 640.5	1 710.4	1 745.1	199.7%
Indonesia	25.1	38.0	68.9	88.0	146.1	214.4	272.8	335.7	379.1	410.1	425.9	191.6%
DPR of Korea	67.5	76.7	105.6	126.4	114.0	74.9	68.6	73.8	66.3	63.8	64.8	-43.1%
Malaysia	12.7	16.1	24.3	33.7	49.6	82.8	112.7	150.9	168.1	183.4	194.0	290.7%
Mongolia	..	..	..	11.6	12.7	10.1	8.8	9.5	11.7	12.6	13.0	3.0%
Myanmar	4.6	4.0	5.2	5.9	4.1	6.9	9.4	10.6	7.0	8.0	8.3	103.8%
Nepal	0.2	0.3	0.5	0.5	0.9	1.7	3.1	3.0	3.4	4.1	4.1	359.1%
Pakistan	16.6	20.9	26.1	39.1	58.6	79.5	99.2	120.5	139.5	135.4	136.3	132.6%
Philippines	23.0	29.0	33.3	28.5	38.2	57.2	67.5	70.7	70.8	76.6	77.1	101.7%
Singapore	6.1	8.5	12.7	16.3	29.4	41.6	47.6	49.6	55.7	64.3	64.8	120.4%
Sri Lanka	2.8	2.7	3.7	3.6	3.7	5.5	10.6	13.4	11.9	13.1	15.0	301.2%
Thailand	16.2	21.2	33.6	41.9	80.4	140.2	154.7	210.8	216.2	236.2	243.2	202.4%
Vietnam	16.1	16.7	14.8	17.1	17.2	27.8	44.0	79.8	113.8	129.4	137.4	698.6%
Other Asia	8.4	10.2	16.5	10.1	10.2	9.4	11.0	15.4	19.1	22.1	23.5	129.8%
Asia	434.1	534.0	711.1	916.9	1 278.6	1 713.0	2 132.2	2 614.8	3 214.8	3 404.7	3 484.0	172.5%
People's Rep. of China	815.6	1 068.5	1 425.4	1 724.5	2 244.9	3 021.6	3 310.1	5 403.1	6 793.0	7 252.6	7 954.5	254.3%
Hong Kong, China	9.2	10.8	14.5	22.0	32.9	36.0	39.9	40.8	45.6	41.5	45.0	37.0%
China	824.7	1 079.3	1 440.0	1 746.5	2 277.7	3 057.6	3 350.0	5 443.9	6 838.6	7 294.1	7 999.6	251.2%
Argentina	82.8	85.5	95.6	88.2	99.9	118.0	139.0	151.9	171.7	177.9	183.6	83.8%
Bolivia	2.2	3.2	4.2	4.3	5.2	6.9	7.1	9.4	12.7	14.1	15.2	195.9%
Brazil	90.2	135.7	177.6	164.2	192.4	235.6	303.6	322.7	338.3	388.5	408.0	112.1%
Colombia	26.7	28.3	35.0	39.6	46.2	58.4	59.2	58.1	62.2	62.2	66.7	44.3%
Costa Rica	1.3	1.7	2.2	2.0	2.6	4.4	4.5	5.7	6.3	6.5	6.7	156.9%
Cuba	20.4	23.7	30.2	31.9	33.8	22.2	27.1	25.1	31.7	29.4	28.0	-17.2%
Dominican Republic	3.4	5.2	6.3	6.2	7.4	11.2	17.1	17.3	18.1	18.2	18.0	144.0%
Ecuador	3.5	5.9	10.5	11.7	12.8	15.4	17.3	24.1	30.4	31.0	30.9	140.9%
El Salvador	1.4	2.0	1.7	1.8	2.2	4.6	5.2	6.3	6.2	5.8	6.0	170.0%
Guatemala	2.3	3.0	4.2	3.2	3.2	5.8	8.5	10.5	11.1	10.3	10.4	225.2%
Haiti	0.4	0.4	0.6	0.8	0.9	0.9	1.4	2.0	2.3	2.0	2.1	125.8%
Honduras	1.1	1.3	1.7	1.7	2.2	3.5	4.4	6.9	7.3	7.3	7.6	253.8%
Jamaica	5.5	7.4	6.5	4.6	7.2	8.3	9.7	10.2	7.5	7.2	7.6	5.8%
Netherlands Antilles	14.4	10.2	8.7	4.6	2.8	2.8	4.5	4.7	5.5	4.3	5.1	87.1%
Nicaragua	1.5	1.8	1.8	1.8	1.8	2.5	3.5	4.0	4.2	4.5	4.5	147.1%
Panama	2.5	3.1	2.9	2.7	2.6	4.1	4.9	6.8	7.8	8.4	9.4	266.3%
Paraguay	0.6	0.7	1.4	1.4	1.9	3.4	3.3	3.4	4.1	4.7	4.9	156.3%
Peru	15.6	18.4	20.5	18.2	19.2	23.7	26.5	28.9	38.2	41.8	44.7	132.7%
Trinidad and Tobago	6.1	5.8	7.9	9.6	11.4	12.3	21.1	33.9	40.2	42.8	40.8	258.6%
Uruguay	5.2	5.5	5.6	3.1	3.7	4.5	5.3	5.3	7.7	6.4	7.6	102.0%
Venezuela	52.1	62.8	92.4	95.2	105.1	118.3	126.7	148.2	167.9	181.6	159.2	51.5%
Other Non-OECD Americas	7.8	10.8	10.2	9.2	12.4	13.4	15.0	16.0	17.2	18.8	19.6	57.8%
Non-OECD Americas	347.1	422.6	527.8	505.8	576.9	680.3	814.8	901.3	998.5	1 073.8	1 086.8	88.4%
Bahrain	3.0	5.3	7.4	10.4	11.7	11.6	14.1	18.1	22.5	23.1	22.7	93.8%
Islamic Republic of Iran	41.7	71.5	90.2	146.4	178.7	251.3	315.1	421.6	513.9	508.0	521.0	191.6%
Iraq	10.4	15.5	27.0	36.8	53.4	97.5	70.3	74.9	89.7	101.3	108.3	102.7%
Jordan	1.3	2.1	4.3	7.4	9.2	12.2	14.4	18.0	19.3	18.8	19.8	114.1%
Kuwait	14.0	15.1	26.6	37.1	28.7	36.1	49.1	70.1	79.8	81.5	84.7	195.1%
Lebanon	4.5	5.6	6.6	6.5	5.5	12.8	14.1	14.5	19.3	18.3	18.5	238.7%
Oman	0.3	0.7	2.2	5.7	10.2	14.7	20.2	28.2	53.8	57.1	63.5	520.2%
Qatar	2.2	4.9	7.7	12.2	14.3	18.8	24.0	36.4	56.2	63.4	71.4	399.8%
Saudi Arabia	12.7	22.5	99.1	122.6	157.5	205.0	249.7	325.3	403.5	438.8	457.3	190.3%
Syrian Arab Republic	6.0	9.0	13.1	21.1	28.2	32.8	39.8	54.9	57.2	57.5	53.2	88.9%
United Arab Emirates	2.4	4.9	19.1	35.6	51.9	69.6	85.6	108.4	150.6	157.4	165.9	219.7%
Yemen	1.2	1.7	3.4	4.8	6.4	9.3	13.2	18.6	22.2	23.7	20.7	222.1%
Middle East	99.8	159.0	306.7	446.7	555.7	771.9	909.6	1 189.2	1 488.1	1 548.9	1 606.9	189.1%

CO₂ emissions: Sectoral Approach - Coal/peatmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World *	5 195.7	5 612.9	6 568.8	7 384.8	8 324.0	8 537.8	9 078.8	11 335.5	12 488.9	13 133.5	13 773.1	65.5%
<i>Annex I Parties</i>	..	..	..	..	5 103.4	4 570.4	4 692.7	4 738.8	4 182.8	4 402.9	4 315.2	-15.4%
<i>Annex II Parties</i>	2 646.0	2 605.6	2 962.7	3 318.2	3 478.5	3 390.6	3 646.7	3 728.2	3 217.4	3 370.5	3 240.4	-6.8%
<i>North America</i>	1 140.6	1 253.8	1 481.2	1 725.0	1 892.1	1 995.3	2 248.9	2 235.9	1 921.8	2 031.3	1 914.4	1.2%
<i>Europe</i>	1 233.9	1 058.9	1 182.7	1 223.8	1 155.4	925.7	843.2	850.6	683.3	707.4	721.9	-37.5%
<i>Asia Oceania</i>	271.5	292.9	298.7	369.4	431.1	469.6	554.6	641.7	612.3	631.8	604.0	40.1%
<i>Annex I EIT</i>	..	..	..	..	1 566.3	1 119.0	957.0	924.3	853.2	912.6	949.7	-39.4%
<i>Non-Annex I Parties</i>	..	..	..	..	3 220.6	3 967.4	4 386.1	6 596.7	8 306.1	8 730.6	9 457.9	193.7%
<i>Annex I Kyoto Parties</i>	..	..	..	..	3 238.4	2 608.0	2 475.0	2 526.5	2 236.5	2 340.4	2 357.6	-27.2%
Intl. marine bunkers	0.1	-	-	-	-	-	-	-	-	-	0.0	x
Intl. aviation bunkers	-	-	-	-	-	-	-	-	-	-	-	-
Non-OECD Total **	2 062.1	2 478.0	2 970.4	3 354.0	4 176.2	4 522.3	4 758.1	6 920.2	8 524.3	8 955.7	9 698.9	132.2%
OECD Total ***	3 133.5	3 134.9	3 598.4	4 030.8	4 147.8	4 015.5	4 320.7	4 415.3	3 964.5	4 177.8	4 074.2	-1.8%
Canada	61.9	57.4	80.5	99.4	94.7	98.9	123.8	112.2	89.6	90.6	84.2	-11.1%
Chile	5.0	3.5	4.7	4.8	9.8	9.0	11.8	10.0	14.9	17.2	20.9	113.9%
Mexico	5.2	6.6	7.2	11.6	14.6	25.8	26.8	38.1	34.0	39.5	40.8	178.9%
United States	1 078.7	1 196.4	1 400.7	1 625.5	1 797.4	1 896.4	2 125.1	2 123.7	1 832.1	1 940.7	1 830.3	1.8%
OECD Americas	1 150.7	1 263.9	1 493.2	1 741.4	1 916.5	2 030.1	2 287.5	2 284.0	1 970.6	2 088.0	1 976.2	3.1%
Australia	73.2	90.3	104.0	116.7	137.1	152.3	189.3	210.8	220.3	207.3	198.8	45.0%
Israel	0.0	0.0	0.0	7.2	9.3	16.1	25.0	28.9	28.6	28.7	29.8	221.3%
Japan	194.1	197.7	190.8	248.8	290.6	313.9	360.9	422.1	385.8	419.1	400.0	37.6%
Korea	21.2	30.6	48.1	80.2	86.3	101.6	173.6	195.0	252.5	276.9	296.0	242.9%
New Zealand	4.2	4.8	3.8	3.9	3.3	3.3	4.3	8.7	6.1	5.3	5.2	56.3%
OECD Asia Oceania	292.7	323.5	346.9	456.7	526.7	587.4	753.2	865.6	893.4	937.4	929.8	76.5%
Austria	15.9	13.5	13.7	16.9	16.1	13.8	14.4	15.9	11.6	14.5	15.0	-6.7%
Belgium	42.2	37.0	40.2	37.8	39.0	33.4	29.0	19.6	10.8	11.4	10.6	-72.7%
Czech Republic	129.2	121.7	129.5	136.1	120.7	88.5	83.9	76.2	70.3	73.3	73.8	-38.9%
Denmark	6.0	8.0	23.8	28.4	23.7	25.3	15.4	14.4	15.7	15.2	12.7	-46.6%
Estonia	..	..	..	..	24.1	11.3	10.5	12.0	10.6	14.2	15.1	-37.3%
Finland	8.4	9.3	19.6	19.8	21.1	23.2	21.0	20.1	21.7	27.9	22.9	8.5%
France	135.3	104.2	121.2	91.3	73.6	57.5	57.4	53.8	41.1	44.1	35.1	-52.2%
Germany	554.1	494.5	552.2	580.7	504.6	370.1	337.2	332.3	290.3	306.2	311.1	-38.4%
Greece	6.8	11.0	13.4	24.9	33.4	36.4	37.6	37.8	35.1	32.9	33.5	0.4%
Hungary	34.9	32.9	36.3	34.5	23.8	17.0	15.2	12.2	9.9	10.4	10.5	-56.0%
Iceland	0.0	-	0.1	0.3	0.3	0.2	0.4	0.4	0.4	0.4	0.4	40.9%
Ireland	8.8	7.1	8.0	10.5	14.4	12.2	10.4	10.8	8.2	8.1	8.0	-44.5%
Italy	31.7	30.2	43.0	58.1	55.1	44.9	43.3	62.8	46.8	51.8	58.4	6.0%
Luxembourg	11.3	7.5	7.9	6.3	4.9	2.0	0.4	0.3	0.3	0.3	0.2	-95.3%
Netherlands	14.4	11.5	13.8	23.1	31.8	33.1	29.1	30.3	27.6	28.2	27.3	-14.1%
Norway	3.7	3.9	3.9	4.4	3.4	4.1	4.2	3.0	2.2	2.7	2.8	-17.3%
Poland	252.5	289.7	350.9	359.8	285.6	268.1	216.8	206.6	194.0	207.3	202.0	-29.3%
Portugal	2.4	1.6	1.6	2.9	10.6	13.9	14.7	13.1	11.1	6.4	8.7	-18.4%
Slovak Republic	23.5	23.7	32.0	33.3	30.7	21.1	16.0	15.6	14.4	14.1	13.9	-54.8%
Slovenia	..	..	..	..	6.5	5.7	5.5	6.3	5.8	5.9	6.0	-8.0%
Spain	36.8	37.4	47.7	69.1	73.5	71.3	81.5	80.0	40.3	31.4	50.0	-32.0%
Sweden	5.4	6.9	5.4	10.6	10.4	9.4	8.1	9.8	6.3	8.9	8.3	-20.2%
Switzerland	2.0	1.0	1.4	2.0	1.4	0.8	0.6	0.6	0.6	0.6	0.6	-59.7%
Turkey	16.0	20.7	26.8	45.1	57.9	60.7	88.9	86.3	112.3	119.7	125.1	116.2%
United Kingdom	348.4	274.2	266.1	236.8	238.2	174.1	138.6	145.5	113.5	116.4	116.3	-51.2%
OECD Europe ***	1 690.0	1 547.5	1 758.4	1 832.7	1 704.7	1 398.1	1 280.0	1 265.7	1 100.5	1 152.4	1 168.2	-31.5%
<i>European Union - 27</i>	..	..	..	..	1 735.0	1 404.6	1 241.1	1 239.7	1 043.0	1 087.5	1 107.9	-36.1%

* Total world includes non-OECD total, OECD total as well as international marine bunkers and international aviation bunkers.

** Includes Estonia and Slovenia prior to 1990.

*** Excludes Estonia and Slovenia prior to 1990.

CO₂ emissions: Sectoral Approach - Coal/peatmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	2 062.1	2 478.0	2 970.4	3 354.0	4 176.2	4 522.3	4 758.1	6 920.2	8 524.3	8 955.7	9 698.9	132.2%
Albania	1.2	1.6	2.5	3.7	2.4	0.1	0.1	0.1	0.2	0.2	0.3	-87.4%
Armenia	..	..	..	..	1.0	0.0	-	-	-	0.0	-	-100.0%
Azerbaijan	..	..	..	..	0.3	0.0	-	-	-	-	-	-100.0%
Belarus	..	..	..	..	9.1	5.2	3.6	2.3	1.8	2.0	2.2	-76.1%
Bosnia and Herzegovina	..	..	..	..	17.3	1.4	9.9	11.7	14.9	15.2	17.9	3.3%
Bulgaria	33.2	35.0	37.8	42.2	36.8	29.6	25.4	27.9	26.2	28.3	33.2	-9.7%
Croatia	..	..	..	..	3.3	0.7	1.7	2.7	2.0	2.7	2.8	-17.3%
Cyprus **	..	..	..	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	-88.3%
Georgia	..	..	..	..	3.4	0.1	0.0	0.0	0.5	0.1	0.2	-92.6%
Gibraltar	-	-	-	-	-	-	-	-	-	-	-	-
Kazakhstan	..	..	..	..	153.3	111.6	75.6	102.8	125.3	134.2	142.1	-7.3%
Kosovo ***	..	..	..	..	..	..	4.0	5.1	6.6	7.0	6.7	..
Kyrgyzstan	..	..	..	..	10.0	1.3	1.8	2.0	2.0	2.7	2.9	-71.4%
Latvia	..	..	..	..	2.7	1.1	0.5	0.3	0.3	0.4	0.5	-83.0%
Lithuania	..	..	..	..	3.1	1.0	0.4	0.7	0.7	0.8	0.9	-69.3%
FYR of Macedonia	..	..	..	..	5.5	5.9	5.5	6.1	5.5	5.4	6.2	12.3%
Malta	-	-	-	0.5	0.7	0.1	-	-	-	-	-	-100.0%
Republic of Moldova	..	..	..	..	7.8	2.3	0.4	0.3	0.4	0.4	0.4	-95.0%
Montenegro ***	..	..	..	..	..	..	..	1.2	0.9	1.7	1.8	..
Romania	31.2	38.0	48.9	57.6	49.7	40.5	28.7	35.2	30.7	29.0	33.9	-31.8%
Russian Federation	..	..	..	..	687.1	468.1	432.6	402.9	362.9	391.9	411.1	-40.2%
Serbia ***	..	..	..	..	41.3	36.2	35.0	33.3	31.9	31.7	35.9	-13.0%
Tajikistan	..	..	..	..	2.5	0.1	0.0	0.2	0.4	0.4	0.4	-83.1%
Turkmenistan	..	..	..	..	1.2	-	-	-	-	-	-	-100.0%
Ukraine	..	..	..	..	283.0	161.2	116.3	123.4	123.7	132.3	144.0	-49.1%
Uzbekistan	..	..	..	..	13.7	4.4	5.1	4.6	5.5	5.4	5.6	-59.0%
Former Soviet Union ****	875.2	1 028.9	1 141.8	982.9	..	..	..	..	..	..	..	..
Former Yugoslavia ****	35.8	40.5	42.6	72.4	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	976.6	1 143.9	1 273.5	1 159.5	1 335.4	870.7	746.9	762.9	742.3	791.8	849.0	-36.4%
Algeria	0.4	0.3	0.2	1.0	1.3	1.4	0.7	1.0	0.7	0.7	0.6	-53.4%
Angola	-	-	-	-	-	-	-	-	-	-	-	-
Benin	-	-	-	-	-	-	-	-	-	-	-	-
Botswana	..	..	..	1.1	1.9	2.2	2.5	2.4	1.8	2.4	1.9	-2.8%
Cameroon	-	-	-	-	-	-	-	-	-	-	-	-
Congo	-	-	-	-	-	-	-	-	-	-	-	-
Dem. Rep. of Congo	1.0	0.8	0.8	0.8	0.9	1.0	0.8	1.0	1.2	1.3	1.3	52.8%
Côte d'Ivoire	-	-	-	-	-	-	-	-	-	-	-	-
Egypt	1.3	2.2	2.1	2.7	2.7	3.0	3.0	3.2	2.9	3.5	3.4	27.6%
Eritrea	..	..	..	..	..	..	..	..	..	..	..	..
Ethiopia	-	-	-	-	-	-	-	-	-	-	-	-
Gabon	-	-	-	-	-	-	-	-	-	-	-	-
Ghana	-	-	-	-	-	-	-	-	-	-	-	-
Kenya	0.2	0.1	0.0	0.2	0.4	0.4	0.3	0.3	0.4	0.6	0.9	151.7%
Libya	-	-	-	-	-	-	-	-	-	-	-	-
Morocco	1.2	1.7	1.6	2.7	4.1	6.7	10.3	12.7	10.5	10.8	11.6	179.9%
Mozambique	1.5	1.2	0.7	0.2	0.1	0.1	-	-	0.0	0.0	0.1	-55.2%
Namibia	..	..	..	..	..	0.0	0.0	0.0	0.1	0.1	0.0	..
Nigeria	0.5	0.6	0.4	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.1	-57.9%
Senegal	-	-	-	-	-	-	-	0.4	0.6	0.6	0.7	x
South Africa	129.2	167.4	173.7	189.2	207.2	225.7	247.6	270.1	296.4	296.9	290.2	40.0%
Sudan	-	-	0.0	-	-	-	-	-	-	-	-	-
United Rep. of Tanzania	-	-	0.0	0.0	0.0	0.1	0.2	0.1	-	0.1	0.1	959.0%
Togo	-	-	-	-	-	-	-	-	-	-	-	-
Tunisia	0.3	0.3	0.3	0.3	0.3	0.3	0.3	-	-	-	-	-100.0%
Zambia	2.0	1.9	1.4	1.1	0.9	0.3	0.3	0.3	0.0	-	-	-100.0%
Zimbabwe	5.6	5.0	6.1	7.5	13.4	11.2	9.6	8.2	6.2	6.8	7.4	-44.3%
Other Africa	0.5	0.7	0.6	0.7	1.0	0.7	2.4	3.0	3.9	4.3	4.6	359.4%
Africa	143.6	182.3	187.9	207.9	234.4	253.2	277.8	302.8	324.8	328.3	322.9	37.8%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

CO₂ emissions: Sectoral Approach - Coal/peatmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	0.4	0.5	0.5	0.2	1.1	1.2	1.3	1.7	3.3	3.5	3.5	224.0%
Brunei Darussalam	-	-	-	-	-	-	-	-	-	-	-	-
Cambodia	..	..	..	..	..	..	..	..	0.0	0.0	0.0	..
Chinese Taipei	10.0	8.4	14.6	26.0	42.3	63.7	109.6	145.3	144.5	154.8	150.1	254.9%
India	142.6	176.1	195.4	283.7	395.9	517.3	623.6	786.8	1 120.4	1 157.1	1 205.2	204.4%
Indonesia	0.5	0.5	0.5	4.5	17.6	26.0	51.4	85.8	111.6	124.5	130.4	642.6%
DPR of Korea	64.9	72.5	97.5	119.0	106.1	70.9	65.4	71.0	63.8	61.3	62.3	-41.3%
Malaysia	0.0	0.0	0.2	1.4	5.1	6.5	9.6	26.7	40.6	57.4	57.3	+
Mongolia	..	..	..	9.4	10.2	9.0	7.5	7.8	9.4	10.1	10.0	-2.3%
Myanmar	0.6	0.6	0.6	0.6	0.3	0.1	1.3	1.3	1.4	1.6	1.6	508.1%
Nepal	0.0	0.1	0.2	0.0	0.2	0.3	1.0	1.0	0.7	1.2	1.1	591.4%
Pakistan	2.5	2.2	2.6	4.8	7.1	7.8	6.7	14.3	17.0	16.0	15.8	123.5%
Philippines	0.1	0.2	1.5	5.4	5.2	7.0	19.5	22.3	25.6	29.6	32.5	522.7%
Singapore	0.0	0.0	0.0	0.1	0.1	0.1	-	0.0	0.0	0.0	-	-100.0%
Sri Lanka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	1.4	+
Thailand	0.5	0.6	1.9	6.5	16.1	29.4	31.4	46.9	58.6	64.2	72.1	348.9%
Vietnam	5.6	10.0	9.2	11.3	9.0	13.4	17.6	33.3	50.8	59.0	62.6	598.2%
Other Asia	4.1	4.3	7.7	0.9	0.8	0.6	1.3	1.6	3.0	4.4	4.7	473.6%
Asia	231.8	276.1	332.4	473.9	617.0	753.3	947.3	1 246.0	1 651.2	1 745.0	1 810.7	193.5%
People's Rep. of China	693.1	855.2	1 146.3	1 456.5	1 918.5	2 566.4	2 698.7	4 507.8	5 705.4	5 980.4	6 592.8	243.6%
Hong Kong, China	0.1	0.1	0.2	12.8	24.4	24.4	17.7	27.2	30.8	26.1	31.4	28.6%
China	693.2	855.3	1 146.5	1 469.3	1 942.9	2 590.7	2 716.4	4 535.0	5 736.3	6 006.4	6 624.2	240.9%
Argentina	3.2	3.3	3.0	3.4	3.4	4.7	4.5	5.6	5.1	5.8	6.3	84.6%
Bolivia	-	-	-	0.2	-	-	-	-	-	-	-	-
Brazil	5.9	6.7	14.6	25.6	26.7	31.6	45.1	44.4	38.5	52.7	55.0	106.5%
Colombia	5.9	6.5	8.6	9.9	11.9	13.6	11.9	10.2	12.1	10.1	12.3	2.6%
Costa Rica	0.0	0.0	0.0	0.0	-	-	0.0	0.1	0.3	0.3	0.3	x
Cuba	0.2	0.1	0.4	0.5	0.6	0.3	0.1	0.1	0.1	0.1	0.1	-78.9%
Dominican Republic	-	-	-	0.5	0.0	0.2	0.2	1.1	2.2	2.1	2.2	+
Ecuador	-	-	-	-	-	-	-	-	-	-	-	-
El Salvador	-	-	0.0	-	-	0.0	0.0	0.0	-	-	-	-
Guatemala	-	-	0.1	-	-	-	0.5	1.0	0.7	1.2	1.1	x
Haiti	-	-	-	0.1	0.0	-	-	-	-	-	-	-100.0%
Honduras	-	-	-	-	0.0	0.0	0.3	0.4	0.5	0.5	0.6	+
Jamaica	-	-	-	-	0.1	0.1	0.1	0.1	0.1	0.1	0.1	7.7%
Netherlands Antilles	-	-	-	-	-	-	-	-	-	-	-	-
Nicaragua	-	-	-	-	-	-	-	-	-	-	-	-
Panama	0.0	0.0	-	0.1	0.1	0.1	0.1	1.0	0.2	0.3	0.8	949.2%
Paraguay	-	-	-	-	-	-	-	-	-	-	-	-
Peru	0.5	0.6	0.6	0.7	0.6	1.4	2.4	3.5	3.3	3.5	3.3	467.5%
Trinidad and Tobago	-	-	-	-	-	-	-	-	-	-	-	-
Uruguay	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-80.4%
Venezuela	0.6	1.0	0.6	0.7	1.8	0.0	0.5	0.1	0.9	0.8	0.8	-55.9%
Other Non-OECD Americas	0.1	0.1	0.1	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.9%
Non-OECD Americas	16.5	18.4	28.0	41.8	45.3	52.0	65.9	67.8	63.9	77.5	82.9	83.2%
Bahrain	-	-	-	-	-	-	-	-	-	-	-	-
Islamic Republic of Iran	0.4	2.1	1.9	1.6	1.2	1.8	3.2	4.5	3.2	3.2	3.8	222.5%
Iraq	-	-	-	-	-	-	-	-	-	-	-	-
Jordan	-	-	-	-	-	-	-	-	-	-	-	-
Kuwait	-	-	-	-	-	-	-	-	-	-	-	-
Lebanon	0.0	0.0	0.0	-	-	0.5	0.5	0.5	0.5	0.6	0.6	x
Oman	-	-	-	-	-	-	-	-	-	-	-	-
Qatar	-	-	-	-	-	-	-	-	-	-	-	-
Saudi Arabia	-	-	-	-	-	-	-	-	-	-	-	-
Syrian Arab Republic	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	0.0	x
United Arab Emirates	-	-	-	-	-	-	-	0.6	2.1	2.8	4.9	x
Yemen	-	-	-	-	-	-	-	-	-	-	-	-
Middle East	0.4	2.1	2.0	1.6	1.2	2.3	3.7	5.6	5.8	6.6	9.3	688.5%

CO₂ emissions: Sectoral Approach - Oil

 million tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World *	6 824.7	7 786.5	8 718.9	8 085.6	8 817.5	9 130.9	9 899.6	10 719.7	10 600.6	11 008.3	11 071.7	25.6%
<i>Annex I Parties</i>	..	..	..	..	5 687.2	5 333.6	5 491.9	5 657.3	5 021.1	5 069.3	5 030.8	-11.5%
<i>Annex II Parties</i>	4 522.9	4 773.7	4 914.7	4 232.8	4 485.6	4 625.2	4 854.3	5 023.5	4 378.6	4 439.6	4 363.2	-2.7%
<i>North America</i>	2 232.9	2 341.6	2 427.9	2 164.8	2 251.2	2 265.8	2 517.9	2 705.0	2 344.4	2 416.6	2 364.4	5.0%
<i>Europe</i>	1 657.7	1 700.3	1 750.2	1 431.1	1 477.7	1 561.0	1 568.7	1 573.5	1 404.8	1 388.3	1 328.9	-10.1%
<i>Asia Oceania</i>	632.3	731.8	736.6	636.9	756.7	798.4	767.6	744.9	629.4	634.7	669.9	-11.5%
<i>Annex I EIT</i>	..	..	..	..	1 137.6	627.3	552.9	553.9	563.5	554.5	590.4	-48.1%
<i>Non-Annex I Parties</i>	..	..	..	..	2 511.6	3 088.1	3 571.3	4 089.0	4 555.8	4 842.6	4 927.2	96.2%
<i>Annex I Kyoto Parties</i>	..	..	..	..	3 493.5	3 168.3	3 104.0	3 123.7	2 825.1	2 814.4	2 818.2	-19.3%
Intl. marine bunkers	344.8	332.4	348.4	298.3	362.3	421.0	486.0	557.3	593.2	643.9	645.1	78.1%
Intl. aviation bunkers	167.3	171.8	199.8	222.6	256.4	288.2	350.4	416.1	430.5	452.5	468.5	82.7%
Non-OECD Total **	1 560.0	2 184.3	2 818.3	2 884.2	3 164.6	3 111.8	3 484.8	4 002.6	4 489.7	4 760.4	4 880.2	54.2%
OECD Total ***	4 752.7	5 098.0	5 352.4	4 680.4	5 034.2	5 309.9	5 578.4	5 743.6	5 087.2	5 151.5	5 077.8	0.9%
Canada	209.8	233.2	246.7	188.8	209.4	212.2	237.1	272.2	253.6	257.9	253.1	20.9%
Chile	14.5	12.4	15.1	13.0	19.1	27.8	30.4	34.1	44.8	42.8	44.5	132.4%
Mexico	71.7	106.5	161.6	186.5	198.6	215.3	256.1	259.3	254.3	254.6	261.0	31.5%
United States	2 023.0	2 108.4	2 181.2	1 976.0	2 041.8	2 053.5	2 280.8	2 432.8	2 090.9	2 158.7	2 111.2	3.4%
OECD Americas	2 319.1	2 460.5	2 604.6	2 364.3	2 468.9	2 508.9	2 804.4	2 998.5	2 643.5	2 713.9	2 669.9	8.1%
Australia	66.8	80.8	87.3	79.9	89.3	94.6	104.7	114.1	117.2	119.5	123.7	38.6%
Israel	14.2	17.0	19.4	17.3	24.2	30.1	30.1	26.6	26.5	29.2	28.0	15.7%
Japan	556.2	639.4	638.6	547.4	655.4	689.5	647.1	613.0	494.6	497.8	528.7	-19.3%
Korea	30.9	46.2	76.2	73.1	135.3	234.1	219.6	203.8	182.1	186.7	182.3	34.7%
New Zealand	9.3	11.6	10.7	9.6	12.0	14.3	15.8	17.9	17.5	17.4	17.5	46.0%
OECD Asia Oceania	677.4	795.0	832.3	727.2	916.3	1 062.5	1 017.4	975.4	837.9	850.6	880.2	-3.9%
Austria	27.2	29.2	33.0	26.9	27.7	29.9	31.2	37.9	32.5	33.3	31.8	15.0%
Belgium	63.3	60.4	65.0	46.7	48.7	55.4	56.9	57.9	52.2	54.3	50.6	3.8%
Czech Republic	19.9	27.9	30.6	27.9	23.0	20.5	20.2	24.9	23.8	22.8	22.1	-3.5%
Denmark	49.0	44.2	38.5	30.2	22.0	24.4	23.5	21.7	20.1	19.7	18.4	-16.2%
Estonia	..	..	..	..	9.3	3.5	2.7	3.1	2.8	3.0	3.0	-67.5%
Finland	31.4	33.6	33.9	26.9	28.2	26.2	26.1	26.3	24.8	25.9	24.4	-13.4%
France	277.3	293.5	292.8	214.5	220.4	227.7	235.9	236.9	216.3	211.6	204.6	-7.1%
Germany	385.7	392.4	385.9	326.6	322.3	344.2	321.9	292.9	267.8	266.2	255.9	-20.6%
Greece	18.4	23.5	32.0	29.6	36.5	39.1	45.7	51.7	48.5	43.8	41.2	13.0%
Hungary	18.6	27.2	29.8	27.0	22.7	19.8	17.3	16.8	17.2	15.9	15.4	-32.4%
Iceland	1.4	1.6	1.7	1.4	1.6	1.7	1.7	1.8	1.7	1.6	1.5	-8.7%
Ireland	12.9	14.0	16.2	11.4	12.1	15.7	23.0	25.0	21.1	20.0	17.4	43.5%
Italy	237.3	248.6	267.5	229.6	252.3	261.1	248.0	231.8	191.2	184.9	181.5	-28.1%
Luxembourg	4.1	3.8	3.0	2.9	4.4	4.7	5.9	8.2	7.0	7.4	7.6	72.7%
Netherlands	68.1	56.8	83.5	55.6	52.7	57.8	60.7	68.5	64.7	65.4	65.2	23.6%
Norway	19.8	19.8	22.0	19.8	20.0	20.4	21.0	22.8	23.0	24.0	22.7	13.7%
Poland	21.9	33.5	42.8	39.2	34.5	40.9	51.5	57.9	64.1	67.1	66.5	92.6%
Portugal	12.0	16.5	22.2	21.8	28.7	34.4	39.8	40.4	31.8	30.6	28.2	-1.6%
Slovak Republic	12.6	15.2	18.1	14.3	14.4	7.1	6.8	9.1	9.1	9.8	9.7	-32.5%
Slovenia	..	..	..	..	5.0	6.7	6.7	7.2	7.4	7.3	7.4	47.3%
Spain	82.4	117.3	136.9	101.6	120.9	143.1	166.8	191.4	168.5	163.7	152.7	26.2%
Sweden	77.1	72.5	67.6	47.3	40.1	45.4	41.5	36.6	31.0	32.8	31.6	-21.2%
Switzerland	36.9	34.8	36.0	35.8	34.2	33.5	33.2	34.2	32.1	32.7	29.5	-13.7%
Turkey	25.4	38.5	44.1	49.4	62.5	78.9	82.7	77.1	76.5	72.8	74.7	19.5%
United Kingdom	253.5	238.0	212.7	202.5	204.7	196.4	185.8	187.6	170.3	170.3	164.0	-19.9%
OECD Europe ***	1 756.2	1 842.6	1 915.6	1 588.9	1 649.1	1 738.5	1 756.6	1 769.7	1 605.7	1 587.0	1 527.7	-7.4%
<i>European Union - 27</i>	..	..	..	..	1 642.5	1 671.7	1 674.1	1 696.4	1 529.6	1 510.6	1 453.0	-11.5%

* Total world includes non-OECD total, OECD total as well as international marine bunkers and international aviation bunkers.

** Includes Estonia and Slovenia prior to 1990.

*** Excludes Estonia and Slovenia prior to 1990.

CO₂ emissions: Sectoral Approach - Oilmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	1 560.0	2 184.3	2 818.3	2 884.2	3 164.6	3 111.8	3 484.8	4 002.6	4 489.7	4 760.4	4 880.2	54.2%
Albania	2.4	2.3	4.4	2.8	3.4	1.7	3.0	3.9	3.2	3.4	3.5	4.3%
Armenia	..	..	..	..	11.2	0.7	0.8	1.0	1.0	1.0	1.0	-91.4%
Azerbaijan	..	..	..	..	22.6	18.5	17.5	13.1	8.0	7.8	9.2	-59.4%
Belarus	..	..	..	..	87.8	30.6	22.3	20.9	26.1	20.9	24.1	-72.5%
Bosnia and Herzegovina	..	..	..	..	5.4	1.5	3.2	3.2	4.4	4.4	4.4	-18.9%
Bulgaria	29.1	34.9	38.6	28.0	26.1	13.7	10.4	12.0	11.4	11.0	10.1	-61.3%
Croatia	..	..	..	..	13.4	11.0	11.3	12.9	12.5	10.6	10.6	-21.3%
Cyprus **	1.8	1.7	2.6	2.6	3.6	5.0	6.1	6.8	7.4	7.1	6.9	91.2%
Georgia	..	..	..	..	19.2	5.8	2.3	2.1	2.5	2.6	2.8	-85.6%
Gibraltar	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.5	0.5	0.5	195.4%
Kazakhstan	..	..	..	..	58.3	32.5	22.1	25.8	27.8	45.8	37.9	-35.0%
Kosovo ***	..	..	..	..	..	..	1.0	1.4	1.7	1.6	1.7	..
Kyrgyzstan	..	..	..	..	8.9	1.4	1.2	1.4	2.5	2.9	3.1	-64.5%
Latvia	..	..	..	..	10.3	5.5	3.8	4.1	4.0	4.1	3.9	-62.0%
Lithuania	..	..	..	..	19.7	9.0	6.5	7.5	7.1	7.1	6.7	-65.9%
FYR of Macedonia	..	..	..	..	3.0	2.3	2.7	2.6	2.7	2.6	2.7	-12.4%
Malta	0.6	0.6	1.0	0.7	1.6	2.2	2.1	2.7	2.5	2.5	2.5	57.5%
Republic of Moldova	..	..	..	..	14.8	3.1	1.2	1.9	2.0	2.2	2.3	-84.3%
Montenegro ***	..	..	..	..	..	..	..	0.5	0.8	0.8	0.7	..
Romania	31.5	40.0	51.6	41.1	50.4	32.4	27.3	29.4	24.8	22.7	23.6	-53.2%
Russian Federation	..	..	..	..	625.4	351.2	332.4	309.9	314.9	314.8	350.2	-44.0%
Serbia ***	..	..	..	..	14.1	4.8	4.1	11.5	10.3	9.9	9.6	-32.0%
Tajikistan	..	..	..	..	5.2	1.2	0.7	0.9	1.6	1.7	1.8	-66.1%
Turkmenistan	..	..	..	..	14.7	7.0	11.1	14.5	14.4	16.1	16.9	15.3%
Ukraine	..	..	..	..	195.5	75.4	33.7	38.2	38.3	37.3	37.1	-81.0%
Uzbekistan	..	..	..	..	30.6	19.8	19.6	14.5	12.4	11.1	10.2	-66.7%
Former Soviet Union ****	688.9	1 018.6	1 210.0	1 193.3	..	..	..	..	..	..	..	..
Former Yugoslavia ****	25.5	31.8	39.2	38.3	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	779.9	1 130.0	1 347.5	1 307.0	1 245.4	636.6	546.8	543.2	544.7	552.6	584.0	-53.1%
Algeria	6.2	9.1	14.8	20.8	24.0	22.9	25.2	31.5	42.3	43.7	46.8	94.7%
Angola	1.6	1.9	2.5	2.7	3.0	2.9	4.0	5.9	12.8	14.3	14.3	379.5%
Benin	0.3	0.5	0.4	0.5	0.3	0.2	1.4	2.7	4.2	4.5	4.7	+
Botswana	..	..	..	0.5	1.0	1.2	1.7	2.0	2.5	2.7	2.8	184.2%
Cameroon	0.7	1.0	1.7	2.4	2.7	2.5	2.8	2.9	4.3	4.5	4.6	73.4%
Congo	0.6	0.6	0.7	0.8	0.6	0.5	0.5	0.8	1.4	1.6	1.8	186.2%
Dem. Rep. of Congo	1.5	1.8	2.3	2.4	2.1	1.1	0.8	1.3	1.7	1.8	1.9	-7.9%
Côte d'Ivoire	2.4	3.0	3.4	3.0	2.6	3.1	3.2	2.9	3.4	3.1	2.8	6.8%
Egypt	18.8	23.4	36.4	54.1	60.8	57.2	66.0	82.0	90.1	89.6	90.1	48.2%
Eritrea	..	..	..	..	..	0.8	0.6	0.6	0.4	0.5	0.5	..
Ethiopia	1.3	1.2	1.4	1.4	2.2	2.4	3.2	4.5	5.8	5.5	5.9	165.1%
Gabon	0.5	0.7	1.3	1.6	0.7	1.1	1.1	1.4	1.7	1.8	1.9	166.8%
Ghana	1.9	2.3	2.3	2.2	2.7	3.3	5.1	6.4	9.1	9.5	9.2	239.7%
Kenya	3.0	3.4	4.4	4.4	5.1	5.4	7.6	7.2	10.4	10.8	10.7	108.6%
Libya	1.6	6.7	13.1	15.5	18.3	26.6	30.8	34.8	40.5	43.3	24.9	35.9%
Morocco	5.6	8.1	12.3	13.6	15.4	19.2	19.0	25.9	30.9	34.0	36.9	139.7%
Mozambique	1.4	1.1	1.6	1.2	0.9	1.0	1.3	1.5	2.0	2.2	2.5	162.0%
Namibia	..	..	..	..	..	1.7	1.8	2.4	2.9	3.0	3.1	..
Nigeria	5.0	10.1	23.4	25.2	22.1	21.9	30.0	38.5	29.8	35.9	36.0	62.8%
Senegal	1.2	1.6	2.0	2.1	2.1	2.4	3.6	4.3	4.8	4.9	5.0	135.8%
South Africa	27.5	34.1	35.1	39.6	46.4	48.8	49.1	59.1	67.9	69.8	73.5	58.5%
Sudan	3.3	3.3	3.7	4.2	5.5	4.6	5.9	9.7	15.0	15.3	14.5	163.6%
United Rep. of Tanzania	1.5	1.5	1.6	1.5	1.7	2.4	2.4	4.2	4.1	4.2	4.5	165.4%
Togo	0.3	0.3	0.4	0.3	0.6	0.6	1.0	1.0	1.1	1.2	1.2	118.7%
Tunisia	3.4	4.0	6.7	7.1	9.0	9.4	11.3	12.5	12.0	11.9	11.2	24.9%
Zambia	1.5	2.5	1.9	1.7	1.7	1.7	1.4	1.8	1.7	1.7	2.1	20.4%
Zimbabwe	1.6	2.1	1.8	2.0	2.6	3.6	3.0	2.1	1.7	1.9	2.0	-23.4%
Other Africa	7.1	8.5	12.4	10.9	13.4	16.0	17.3	20.7	23.6	25.3	26.5	97.3%
Africa	99.9	132.9	187.7	221.8	247.7	264.4	301.1	370.5	428.0	448.5	442.0	78.5%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

CO₂ emissions: Sectoral Approach - Oilmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	2.2	3.3	4.6	4.6	5.2	8.4	9.5	12.9	13.0	13.8	14.6	181.0%
Brunei Darussalam	0.2	0.2	0.5	0.6	0.7	1.1	1.2	1.3	1.8	1.7	1.9	153.6%
Cambodia	..	..	..	..	..	1.5	2.0	2.6	3.6	3.7	4.0	..
Chinese Taipei	19.0	31.3	54.9	43.5	68.8	86.6	95.0	94.3	79.7	82.6	78.2	13.7%
India	56.3	63.3	85.3	119.3	165.8	223.8	301.5	309.1	415.4	438.0	430.1	159.3%
Indonesia	24.4	36.4	61.0	70.0	97.9	134.3	166.4	189.2	192.5	208.6	219.8	124.5%
DPR of Korea	2.6	4.2	8.0	7.4	7.9	3.9	3.1	2.8	2.6	2.5	2.6	-67.6%
Malaysia	12.6	16.0	23.9	27.9	37.6	53.2	57.5	64.8	67.7	67.2	73.1	94.6%
Mongolia	..	..	..	2.2	2.4	1.0	1.3	1.7	2.3	2.5	3.1	25.5%
Myanmar	3.9	3.0	3.9	3.5	2.1	4.0	5.4	6.2	3.3	3.3	3.5	68.1%
Nepal	0.2	0.2	0.3	0.5	0.7	1.5	2.1	2.1	2.7	2.9	2.9	306.5%
Pakistan	8.8	11.0	13.2	20.9	30.6	43.7	58.0	49.4	63.1	62.2	61.3	100.1%
Philippines	23.0	28.9	31.8	23.0	33.0	50.1	48.0	41.8	37.7	39.8	36.9	11.9%
Singapore	6.1	8.4	12.6	16.1	29.0	38.0	44.3	35.0	38.2	45.1	45.0	55.1%
Sri Lanka	2.7	2.7	3.7	3.6	3.7	5.5	10.6	13.2	11.6	12.9	13.6	265.9%
Thailand	15.8	20.6	31.8	28.5	52.7	90.5	82.7	103.4	90.9	95.9	100.5	90.7%
Vietnam	10.6	6.7	5.6	5.8	8.2	13.9	23.8	35.5	46.4	51.4	55.9	579.2%
Other Asia	3.8	5.4	8.6	8.0	8.8	8.3	9.2	13.2	15.4	16.8	17.9	102.4%
Asia	192.1	241.6	349.9	385.2	555.3	769.4	921.3	978.3	1 087.8	1 151.1	1 164.8	109.8%
People's Rep. of China	115.2	195.9	251.2	246.1	299.5	423.6	568.0	812.4	923.8	1 060.3	1 102.9	268.3%
Hong Kong, China	9.0	10.7	14.3	9.3	8.5	11.6	16.4	8.4	9.7	8.9	8.6	1.6%
China	124.2	206.6	265.5	255.3	308.0	435.2	584.4	820.8	933.5	1 069.2	1 111.5	260.9%
Argentina	67.3	65.1	70.9	54.4	53.1	62.1	66.0	67.9	78.7	83.7	84.9	60.0%
Bolivia	2.0	2.9	3.6	3.3	3.7	4.6	4.7	5.7	7.4	8.0	8.6	132.1%
Brazil	83.9	127.8	160.9	133.6	158.8	195.2	241.1	240.2	260.8	284.0	302.6	90.6%
Colombia	18.1	18.6	20.7	22.3	26.8	36.4	34.6	33.5	32.7	33.9	37.0	38.4%
Costa Rica	1.3	1.7	2.2	2.0	2.6	4.4	4.4	5.6	6.0	6.3	6.4	147.0%
Cuba	20.1	23.4	29.7	31.2	33.1	21.8	25.9	23.6	29.4	27.2	25.9	-21.6%
Dominican Republic	3.4	5.2	6.3	5.6	7.4	11.0	16.9	15.7	14.9	14.6	14.2	93.0%
Ecuador	3.5	5.9	10.5	11.7	12.8	15.4	17.3	23.4	29.5	30.0	30.1	134.1%
El Salvador	1.4	2.0	1.7	1.8	2.2	4.6	5.2	6.3	6.2	5.8	6.0	170.0%
Guatemala	2.3	3.0	4.2	3.2	3.2	5.8	7.9	9.5	10.4	9.1	9.3	190.2%
Haiti	0.4	0.4	0.6	0.6	0.9	0.9	1.4	2.0	2.3	2.0	2.1	132.9%
Honduras	1.1	1.3	1.7	1.7	2.2	3.5	4.1	6.5	6.9	6.8	7.0	226.1%
Jamaica	5.5	7.4	6.5	4.6	7.1	8.2	9.6	10.1	7.3	7.0	7.5	5.8%
Netherlands Antilles	14.4	10.2	8.7	4.6	2.8	2.8	4.5	4.7	5.5	4.3	5.1	87.1%
Nicaragua	1.5	1.8	1.8	1.8	1.8	2.5	3.5	4.0	4.2	4.5	4.5	147.1%
Panama	2.5	3.1	2.9	2.6	2.5	4.0	4.8	5.8	7.6	8.1	8.6	245.2%
Paraguay	0.6	0.7	1.4	1.4	1.9	3.4	3.3	3.4	4.1	4.7	4.9	156.3%
Peru	14.4	17.0	18.9	16.2	17.6	21.8	23.0	21.5	25.4	25.4	26.3	49.8%
Trinidad and Tobago	2.7	3.0	2.8	2.5	2.1	2.2	2.6	4.0	4.3	4.7	4.5	115.3%
Uruguay	5.1	5.4	5.5	3.1	3.7	4.5	5.2	5.1	7.5	6.3	7.4	98.7%
Venezuela	30.7	37.5	59.1	56.0	57.0	59.9	64.6	84.1	97.6	107.2	97.8	71.6%
Other Non-OECD Americas	7.7	10.7	10.1	9.1	12.4	13.3	14.3	14.6	15.7	17.3	18.0	45.7%
Non-OECD Americas	290.1	354.3	430.7	373.3	415.5	488.5	564.8	597.2	664.3	701.1	718.9	73.0%
Bahrain	1.2	1.2	1.7	1.8	2.1	2.4	2.5	3.6	4.1	4.2	4.0	91.5%
Islamic Republic of Iran	35.8	61.4	79.7	128.0	140.5	169.5	190.7	223.6	245.2	222.2	223.2	58.8%
Iraq	8.6	12.4	24.5	35.2	49.6	91.4	64.3	71.4	80.7	91.5	96.6	94.5%
Jordan	1.3	2.1	4.3	7.4	9.0	11.7	13.9	14.8	12.1	13.4	17.8	97.1%
Kuwait	4.1	5.2	13.4	27.4	17.2	18.4	30.8	46.7	57.9	53.8	52.3	203.9%
Lebanon	4.5	5.6	6.6	6.5	5.5	12.4	13.6	14.0	18.7	17.3	17.8	227.0%
Oman	0.3	0.7	1.5	3.6	5.3	8.0	8.8	12.2	19.3	19.4	20.8	291.8%
Qatar	0.3	0.7	1.4	1.7	2.1	2.6	3.1	7.0	16.3	17.7	16.7	688.4%
Saudi Arabia	10.0	17.1	77.9	88.5	111.3	143.0	174.7	208.5	277.5	299.7	313.4	181.7%
Syrian Arab Republic	6.0	9.0	13.0	20.8	25.0	28.0	29.4	44.1	44.3	40.0	38.5	54.1%
United Arab Emirates	0.4	1.6	9.5	15.8	18.8	21.1	21.4	28.1	33.8	36.6	39.0	107.7%
Yemen	1.2	1.7	3.4	4.8	6.4	9.3	13.2	18.6	21.4	22.0	18.9	193.8%
Middle East	73.8	118.9	237.0	341.5	392.8	517.8	566.3	692.6	831.3	837.8	858.9	118.7%

CO₂ emissions: Sectoral Approach - Natural gasmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World *	2 058.6	2 281.5	2 768.1	3 163.1	3 806.0	4 108.1	4 685.7	5 353.1	5 762.8	6 226.9	6 334.8	66.4%
<i>Annex I Parties</i>	..	..	..	..	3 070.2	3 178.2	3 471.3	3 637.9	3 626.8	3 883.7	3 882.3	26.5%
<i>Annex II Parties</i>	1 438.5	1 503.1	1 663.5	1 616.2	1 794.6	2 123.1	2 426.3	2 481.5	2 535.3	2 690.4	2 657.9	48.1%
<i>North America</i>	1 257.4	1 143.4	1 179.4	1 058.1	1 135.1	1 309.4	1 423.0	1 359.9	1 410.1	1 479.7	1 506.5	32.7%
<i>Europe</i>	168.1	331.0	414.3	446.1	505.1	631.3	783.8	885.9	846.8	918.0	820.6	62.5%
<i>Asia Oceania</i>	12.9	28.7	69.8	112.0	154.4	182.4	219.5	235.8	278.4	292.7	330.8	114.2%
<i>Annex I EIT</i>	..	..	..	..	1 269.1	1 042.1	1 016.2	1 103.5	1 024.1	1 120.1	1 138.6	-10.3%
<i>Non-Annex I Parties</i>	..	..	..	..	735.8	929.9	1 214.3	1 715.2	2 136.1	2 343.2	2 452.5	233.3%
<i>Annex I Kyoto Parties</i>	..	..	..	..	2 024.8	1 979.4	2 155.3	2 357.1	2 291.7	2 468.5	2 442.9	20.6%
Intl. marine bunkers	-	-	-	-	-	-	-	-	-	-	-	-
Intl. aviation bunkers	-	-	-	-	-	-	-	-	-	-	-	-
Non-OECD Total **	575.5	719.4	1 013.7	1 438.4	1 878.4	1 826.7	2 038.1	2 561.3	2 887.3	3 146.8	3 264.6	73.8%
OECD Total ***	1 483.1	1 562.1	1 754.3	1 724.7	1 927.6	2 281.4	2 647.6	2 791.7	2 875.5	3 080.1	3 070.2	59.3%
Canada	67.9	87.3	99.7	113.9	123.8	149.1	168.1	170.2	175.6	178.8	191.8	55.0%
Chile	1.3	1.1	1.4	1.6	2.1	2.1	10.3	14.0	5.8	9.8	10.9	417.6%
Mexico	20.2	25.6	43.2	53.6	52.1	55.9	66.6	88.3	111.7	123.8	130.5	150.6%
United States	1 189.5	1 056.1	1 079.7	944.2	1 011.3	1 160.2	1 254.9	1 189.7	1 234.5	1 300.9	1 314.7	30.0%
OECD Americas	1 278.9	1 170.1	1 224.0	1 113.3	1 189.3	1 367.4	1 499.9	1 462.2	1 527.6	1 613.3	1 647.9	38.6%
Australia	4.1	8.9	16.7	24.4	32.8	37.7	43.9	54.8	66.7	68.7	73.8	124.9%
Israel	0.2	0.1	0.2	0.1	0.0	0.0	0.0	3.1	8.4	10.1	9.4	+
Japan	8.5	19.2	51.2	81.5	114.6	137.1	164.8	173.7	204.2	215.8	249.4	117.6%
Korea	-	-	-	-	6.4	19.4	39.9	63.8	72.0	90.7	97.8	+
New Zealand	0.2	0.6	1.8	6.1	7.0	7.6	10.8	7.3	7.5	8.2	7.6	8.6%
OECD Asia Oceania	13.1	28.8	70.0	112.0	160.8	201.8	259.4	302.8	358.8	393.6	438.0	172.4%
Austria	5.6	7.5	9.0	10.1	11.8	14.7	15.0	18.8	17.2	18.9	17.9	51.1%
Belgium	11.3	18.2	20.5	16.9	18.9	24.5	30.7	33.3	34.6	38.8	34.9	84.8%
Czech Republic	1.9	3.1	5.6	9.1	11.5	14.5	17.0	17.8	15.2	17.4	15.7	37.4%
Denmark	-	0.0	0.0	1.5	4.2	7.3	10.3	10.4	9.2	10.3	8.7	109.5%
Estonia	..	..	..	..	2.7	1.3	1.5	1.8	1.2	1.3	1.2	-56.7%
Finland	-	1.5	1.7	1.9	5.1	6.6	7.9	8.4	7.9	8.7	7.7	50.8%
France	19.2	33.0	47.4	54.5	56.1	65.8	81.1	92.5	86.8	95.6	82.9	47.9%
Germany	38.8	86.4	114.9	105.3	118.1	147.0	158.4	171.1	162.8	179.0	163.0	38.0%
Greece	-	-	-	0.1	0.2	0.1	3.9	5.4	6.6	7.2	8.8	+
Hungary	6.8	10.7	17.6	19.2	19.8	20.3	21.6	27.0	20.7	22.2	21.1	6.4%
Iceland	-	-	-	-	-	-	-	-	-	-	-	-
Ireland	-	-	1.7	4.5	4.0	5.0	7.7	8.2	9.9	10.8	9.5	138.6%
Italy	23.9	40.8	49.3	59.8	89.2	102.8	134.0	163.2	148.0	157.4	148.0	65.8%
Luxembourg	0.0	0.8	1.0	0.7	1.0	1.3	1.6	2.7	2.6	2.8	2.4	140.5%
Netherlands	47.0	72.5	69.4	75.3	70.2	78.6	79.7	80.7	80.5	90.1	78.5	11.8%
Norway	-	0.4	2.0	2.8	4.6	8.1	8.0	10.0	11.3	11.9	11.3	145.4%
Poland	11.4	13.5	17.6	18.2	18.5	18.3	20.6	26.2	26.1	27.9	28.1	52.2%
Portugal	-	-	-	-	-	-	4.6	8.6	9.6	10.4	10.6	x
Slovak Republic	2.9	4.9	5.1	6.7	11.7	11.7	13.1	13.2	9.8	11.2	10.1	-13.3%
Slovenia	..	..	..	..	1.8	1.7	1.8	2.1	1.9	2.0	1.7	-4.1%
Spain	0.7	1.8	3.1	4.5	10.5	17.4	34.7	67.2	72.3	72.0	66.9	534.9%
Sweden	-	-	-	0.2	1.2	1.6	1.6	1.7	2.5	3.2	2.6	110.9%
Switzerland	0.0	1.0	1.9	2.9	3.8	5.1	5.6	6.5	6.3	7.0	6.2	64.9%
Turkey	-	-	-	0.1	6.5	13.0	28.9	52.8	67.4	73.2	85.7	+
United Kingdom	21.6	67.2	92.3	105.2	106.0	145.4	199.0	197.2	178.8	193.8	160.8	51.6%
OECD Europe ***	191.1	363.2	460.3	499.4	577.5	712.2	888.3	1 026.8	989.2	1 073.1	984.3	70.4%
<i>European Union - 27</i>	..	..	..	..	657.9	745.6	889.4	1 002.1	939.6	1 018.5	919.5	39.8%

* Total world includes non-OECD total, OECD total as well as international marine bunkers and international aviation bunkers.

** Includes Estonia and Slovenia prior to 1990.

*** Excludes Estonia and Slovenia prior to 1990.

CO₂ emissions: Sectoral Approach - Natural gasmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	575.5	719.4	1 013.7	1 438.4	1 878.4	1 826.7	2 038.1	2 561.3	2 887.3	3 146.8	3 264.6	73.8%
Albania	0.2	0.6	0.8	0.8	0.5	0.1	0.0	0.0	0.0	0.0	0.0	-94.1%
Armenia	..	..	..	..	8.3	2.7	2.6	3.1	3.3	3.0	3.7	-55.6%
Azerbaijan	..	..	..	..	32.1	15.4	10.4	17.7	16.8	16.1	17.6	-45.1%
Belarus	..	..	..	..	27.5	25.6	32.2	38.3	33.1	41.2	38.9	41.5%
Bosnia and Herzegovina	..	..	..	..	0.9	0.3	0.5	0.7	0.4	0.5	0.5	-43.0%
Bulgaria	0.6	2.3	7.4	10.8	12.0	10.0	6.2	5.9	4.7	5.0	5.8	-51.7%
Croatia	..	..	..	..	4.7	4.1	4.7	5.1	5.2	5.7	5.4	14.5%
Cyprus **	..	..	..	..	..	..	..	..	..	..	..	-
Georgia	..	..	..	..	10.6	2.2	2.2	2.2	2.3	2.2	3.2	-69.7%
Gibraltar	..	..	..	..	..	..	..	..	..	..	..	-
Kazakhstan	..	..	..	..	24.8	23.5	15.2	28.5	46.3	53.7	54.2	118.6%
Kosovo ***	..	..	..	..	..	..	..	..	..	..	..	..
Kyrgyzstan	..	..	..	..	3.6	1.7	1.3	1.4	0.6	0.6	0.7	-81.7%
Latvia	..	..	..	..	5.6	2.3	2.5	3.2	2.8	3.4	3.0	-46.3%
Lithuania	..	..	..	..	10.3	4.3	4.3	5.3	4.6	5.4	5.6	-46.3%
FYR of Macedonia	..	..	..	..	..	..	0.1	0.1	0.1	0.2	0.3	x
Malta	..	..	..	..	..	..	..	..	..	..	..	-
Republic of Moldova	..	..	..	..	7.6	6.4	4.8	5.5	5.0	5.3	5.2	-31.8%
Montenegro ***	..	..	..	..	..	..	..	..	..	..	..	..
Romania	52.1	62.6	75.7	74.6	67.4	43.1	30.6	30.2	23.2	23.7	24.2	-64.1%
Russian Federation	..	..	..	..	866.3	728.8	718.1	783.4	784.8	851.7	873.5	0.8%
Serbia ***	..	..	..	..	6.0	3.0	3.4	4.3	3.2	4.1	4.3	-29.5%
Tajikistan	..	..	..	..	3.2	1.2	1.5	1.3	0.8	0.8	0.8	-74.8%
Turkmenistan	..	..	..	..	28.6	26.2	25.5	33.3	35.2	40.5	44.6	55.8%
Ukraine	..	..	..	..	209.4	156.1	141.9	144.0	90.5	102.1	104.3	-50.2%
Uzbekistan	..	..	..	..	75.5	77.4	93.4	89.4	86.2	85.0	94.4	25.0%
Former Soviet Union ****	431.8	520.4	704.2	1 021.2	..	..	..	..	..	..	..	..
Former Yugoslavia ****	1.9	2.9	5.8	11.0	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	486.6	588.8	793.9	1 118.3	1 405.0	1 134.3	1 101.6	1 203.1	1 149.5	1 250.2	1 290.2	-8.2%
Algeria	2.4	4.6	13.4	21.7	27.4	32.4	37.6	46.9	53.7	53.4	56.5	105.9%
Angola	0.1	0.1	0.2	0.2	1.0	1.1	1.1	1.2	1.3	1.4	1.4	38.9%
Benin	..	..	..	..	..	..	..	..	..	..	..	-
Botswana	..	..	..	..	..	..	..	..	..	..	..	-
Cameroon	..	..	..	..	..	..	..	..	0.5	0.5	0.5	x
Congo	0.0	0.0	..	0.0	..	..	..	0.0	0.1	0.2	0.3	x
Dem. Rep. of Congo	..	..	..	..	..	..	..	..	0.0	0.0	0.0	x
Côte d'Ivoire	..	..	..	..	..	0.1	3.0	2.9	2.8	3.1	3.1	x
Egypt	0.2	0.1	3.4	7.9	14.9	22.9	32.4	67.6	79.7	85.3	94.9	535.6%
Eritrea	..	..	..	..	..	..	..	..	..	..	..	..
Ethiopia	..	..	..	..	..	..	..	..	..	..	..	..
Gabon	..	..	0.0	0.1	0.2	0.3	0.2	0.3	0.3	0.4	0.3	56.9%
Ghana	..	..	..	..	..	..	..	..	0.0	0.8	1.6	x
Kenya	..	..	..	..	..	..	..	..	..	..	..	-
Libya	2.1	2.5	5.5	7.0	9.0	8.5	8.8	10.4	11.8	12.3	10.0	10.6%
Morocco	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.9	1.2	1.3	1.7	+
Mozambique	..	..	..	..	..	0.0	0.0	0.0	0.2	0.3	0.3	x
Namibia	..	..	..	..	..	..	..	..	..	..	..	..
Nigeria	0.4	1.0	2.9	6.9	6.9	9.2	12.0	16.7	12.5	15.9	16.8	144.0%
Senegal	..	..	..	..	0.0	0.1	0.0	0.0	0.0	0.0	0.0	175.7%
South Africa	..	..	..	..	..	..	..	..	..	3.9	3.8	x
Sudan	..	..	..	..	..	..	..	..	..	..	..	-
United Rep. of Tanzania	..	..	..	..	..	..	..	0.8	1.3	1.5	1.7	x
Togo	..	..	..	..	..	..	..	..	..	..	..	-
Tunisia	0.0	0.5	0.8	2.2	2.8	4.6	6.4	7.7	9.3	10.0	10.0	255.3%
Zambia	..	..	..	..	..	..	..	..	..	..	..	-
Zimbabwe	..	..	..	..	..	..	..	..	..	..	..	-
Other Africa	..	..	..	..	..	..	0.0	0.1	0.1	0.1	0.1	x
Africa	5.2	9.0	26.3	46.2	62.4	79.2	101.5	155.5	175.0	190.4	202.9	225.1%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

CO₂ emissions: Sectoral Approach - Natural gasmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	0.6	0.9	2.1	4.0	7.3	10.9	14.6	22.2	33.9	36.0	36.0	393.8%
Brunei Darussalam	0.2	1.2	2.1	2.3	2.5	3.4	3.2	3.5	5.7	6.2	7.0	180.2%
Cambodia	..	..	..	..	..	..	..	..	..	..	..	..
Chinese Taipei	1.9	2.7	3.3	1.9	3.3	7.8	12.9	20.7	24.0	30.4	33.3	916.0%
India	1.3	1.9	2.5	8.0	20.6	35.3	47.1	68.5	104.7	115.3	109.8	432.4%
Indonesia	0.3	1.0	7.3	13.6	30.6	54.1	55.0	60.7	75.0	77.0	75.7	147.4%
DPR of Korea	-	-	-	-	-	-	-	-	-	-	-	-
Malaysia	0.0	0.1	0.1	4.4	6.9	23.1	45.5	59.4	59.7	58.8	63.5	818.0%
Mongolia	..	..	..	..	..	..	..	..	..	..	..	..
Myanmar	0.1	0.3	0.6	1.8	1.7	2.8	2.7	3.0	2.3	3.1	3.2	85.0%
Nepal	-	-	-	-	-	-	-	-	-	-	-	-
Pakistan	5.3	7.7	10.3	13.4	20.9	28.0	34.5	56.9	59.3	57.2	59.2	183.1%
Philippines	-	-	-	-	-	0.0	0.0	6.7	7.5	7.1	7.7	x
Singapore	0.0	0.1	0.1	0.1	0.1	3.1	2.9	13.9	16.7	18.2	18.8	+
Sri Lanka	-	-	-	-	-	-	-	-	-	-	-	-
Thailand	-	-	-	6.8	11.7	20.4	40.6	60.6	66.7	76.1	70.6	505.1%
Vietnam	-	-	-	0.1	0.0	0.4	2.6	11.0	16.6	19.0	18.9	+
Other Asia	0.5	0.5	0.2	1.2	0.6	0.5	0.5	0.5	0.7	0.9	0.9	57.6%
Asia	10.2	16.3	28.8	57.7	106.2	189.9	262.1	387.4	472.8	505.4	504.5	375.1%
People's Rep. of China	7.3	17.3	28.0	21.9	26.9	31.6	43.4	82.9	163.7	194.7	238.5	787.4%
Hong Kong, China	-	-	-	-	-	0.1	5.7	5.1	5.1	6.5	5.1	x
China	7.3	17.3	28.0	21.9	26.9	31.7	49.2	88.0	168.8	201.3	243.5	806.2%
Argentina	12.3	17.1	21.7	30.5	43.4	51.2	68.5	78.4	87.9	88.4	92.3	113.0%
Bolivia	0.1	0.3	0.6	0.8	1.4	2.3	2.4	3.7	5.4	6.0	6.6	359.9%
Brazil	0.5	1.1	2.2	5.0	7.0	8.8	17.4	38.0	39.1	51.8	50.3	622.2%
Colombia	2.6	3.2	5.7	7.3	7.5	8.3	12.8	14.3	17.4	18.2	17.4	131.4%
Costa Rica	-	-	-	-	-	-	-	-	-	-	-	-
Cuba	0.1	0.2	0.1	0.1	0.1	0.2	1.1	1.5	2.2	2.0	1.9	+
Dominican Republic	-	-	-	-	-	-	-	0.4	1.0	1.5	1.6	x
Ecuador	-	-	-	-	-	-	-	0.6	0.9	1.0	0.9	x
El Salvador	-	-	-	-	-	-	-	-	-	-	-	-
Guatemala	-	-	-	-	-	-	-	-	-	-	-	-
Haiti	-	-	-	-	-	-	-	-	-	-	-	-
Honduras	-	-	-	-	-	-	-	-	-	-	-	-
Jamaica	-	-	-	-	-	-	-	-	-	-	-	-
Netherlands Antilles	-	-	-	-	-	-	-	-	-	-	-	-
Nicaragua	-	-	-	-	-	-	-	-	-	-	-	-
Panama	-	-	-	-	-	-	-	-	-	-	-	-
Paraguay	-	-	-	-	-	-	-	-	-	-	-	-
Peru	0.6	0.8	1.0	1.3	1.0	0.6	1.1	3.9	9.6	12.8	15.1	+
Trinidad and Tobago	3.4	2.8	5.1	7.1	9.3	10.0	18.4	29.9	35.9	38.0	36.3	291.0%
Uruguay	-	-	-	-	-	-	0.1	0.2	0.1	0.1	0.2	x
Venezuela	20.8	24.3	32.6	38.5	46.3	58.4	61.7	64.0	69.4	73.7	60.7	31.0%
Other Non-OECD Americas	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.4	1.5	1.5	1.6	+
Non-OECD Americas	40.5	49.9	69.1	90.7	116.1	139.8	184.2	236.3	270.4	295.2	284.9	145.3%
Bahrain	1.8	4.1	5.7	8.6	9.6	9.3	11.6	14.6	18.4	18.9	18.7	94.3%
Islamic Republic of Iran	5.5	8.1	8.5	16.8	37.0	80.0	121.1	193.5	265.5	282.6	294.0	694.6%
Iraq	1.8	3.1	2.4	1.6	3.8	6.0	6.0	3.5	9.0	9.8	11.7	209.5%
Jordan	-	-	-	-	0.2	0.5	0.5	3.2	7.2	5.3	2.0	759.4%
Kuwait	9.9	9.9	13.2	9.7	11.5	17.7	18.3	23.5	21.9	27.7	32.4	181.9%
Lebanon	-	-	-	-	-	-	-	-	0.1	0.5	-	-
Oman	-	-	0.7	2.1	4.9	6.7	11.4	16.0	34.5	37.6	42.6	767.3%
Qatar	1.9	4.2	6.3	10.5	12.2	16.2	20.9	29.4	39.9	45.7	54.6	349.5%
Saudi Arabia	2.7	5.4	21.2	34.1	46.3	62.0	75.0	116.8	126.0	139.1	143.9	211.1%
Syrian Arab Republic	-	-	0.1	0.3	3.2	4.8	10.4	10.8	13.0	17.5	14.7	360.4%
United Arab Emirates	2.0	3.3	9.6	19.8	33.1	48.5	64.2	79.7	114.7	118.0	122.1	268.6%
Yemen	-	-	-	-	-	-	-	-	0.8	1.7	1.8	x
Middle East	25.6	38.0	67.7	103.6	161.8	251.8	339.5	491.0	650.9	704.4	738.6	356.5%

CO₂ emissions: Reference Approach

 million tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World *	14 611.9	16 154.7	18 627.9	19 281.9	21 545.7	22 112.2	23 981.8	27 965.3	29 729.4	31 545.1	32 331.6	50.1%
<i>Annex I Parties</i>	..	..	..	..	14 167.8	13 311.9	13 866.9	14 311.8	13 118.5	13 607.0	13 468.2	-4.9%
<i>Annex II Parties</i>	8 638.2	8 951.2	9 719.4	9 303.1	9 843.5	10 213.6	11 020.3	11 370.0	10 316.6	10 584.0	10 336.4	5.0%
<i>North America</i>	4 612.3	4 775.0	5 189.1	5 009.7	5 283.9	5 571.2	6 195.0	6 389.3	5 784.1	5 910.8	5 778.2	9.4%
<i>Europe</i>	3 098.9	3 118.8	3 387.8	3 151.9	3 201.1	3 170.9	3 255.2	3 367.3	3 030.5	3 100.1	2 964.9	-7.4%
<i>Asia Oceania</i>	927.0	1 057.4	1 142.4	1 141.5	1 358.5	1 471.5	1 570.1	1 613.4	1 502.0	1 573.1	1 593.3	17.3%
<i>Annex I EIT</i>	..	..	..	..	4 183.8	2 938.8	2 641.0	2 719.5	2 543.3	2 746.6	2 830.4	-32.3%
<i>Non-Annex I Parties</i>	..	..	..	..	6 759.2	8 091.1	9 278.5	12 680.0	15 587.3	16 841.7	17 749.7	162.6%
<i>Annex I Kyoto Parties</i>	..	..	..	..	9 039.8	7 970.9	7 925.1	8 181.6	7 499.9	7 837.9	7 789.7	-13.8%
Intl. marine bunkers	344.8	332.4	348.4	298.3	362.3	421.0	486.0	557.3	593.2	643.9	645.1	78.1%
Intl. aviation bunkers	167.3	171.8	199.8	222.6	256.4	288.2	350.4	416.1	430.5	452.5	468.5	82.7%
Non-OECD Total **	4 638.3	5 726.6	7 112.3	8 133.5	9 652.3	9 688.4	10 484.0	13 850.8	16 540.1	17 883.1	18 829.1	95.1%
OECD Total ***	9 461.5	9 923.9	10 967.4	10 627.5	11 274.7	11 714.6	12 661.4	13 141.1	12 165.6	12 565.6	12 388.8	9.9%
Canada	337.2	392.3	426.2	399.9	423.6	452.7	518.8	545.4	487.9	482.7	470.8	11.1%
Chile	21.5	17.5	21.7	19.8	31.2	39.3	53.7	59.8	65.7	72.7	78.9	152.7%
Mexico	100.8	145.1	242.2	265.7	289.8	299.2	345.2	414.7	426.8	435.5	452.9	56.3%
United States	4 275.1	4 382.7	4 763.0	4 609.9	4 860.4	5 118.5	5 676.2	5 843.9	5 296.2	5 428.1	5 307.4	9.2%
OECD Americas	4 734.6	4 937.7	5 453.0	5 295.3	5 604.9	5 909.7	6 593.9	6 863.7	6 276.6	6 418.9	6 309.9	12.6%
Australia	156.9	182.7	212.1	220.0	260.9	278.6	330.4	350.8	377.8	375.0	373.0	42.9%
Israel	17.2	21.0	23.1	23.5	34.9	48.1	55.2	56.2	62.9	67.4	67.7	94.3%
Japan	755.6	857.1	913.0	899.8	1 074.1	1 165.5	1 208.4	1 229.3	1 092.7	1 167.2	1 190.1	10.8%
Korea	54.8	77.9	125.7	157.7	238.6	355.3	441.0	464.6	518.1	579.6	608.7	155.1%
New Zealand	14.4	17.7	17.3	21.7	23.4	27.4	31.3	33.3	31.5	30.9	30.3	29.3%
OECD Asia Oceania	999.0	1 156.3	1 291.2	1 322.6	1 631.9	1 874.8	2 066.4	2 134.3	2 083.1	2 220.1	2 269.8	39.1%
Austria	51.2	52.3	58.3	55.9	57.2	60.2	62.6	75.4	64.3	70.0	67.4	17.7%
Belgium	120.0	119.5	129.8	103.9	109.4	116.3	121.4	114.8	107.9	115.0	111.1	1.5%
Czech Republic	168.5	158.9	170.1	174.5	160.7	126.8	125.3	124.9	111.4	115.8	114.1	-29.0%
Denmark	56.2	52.6	61.0	61.0	51.0	58.1	51.3	48.5	46.5	47.4	42.3	-17.0%
Estonia	..	..	..	..	38.5	19.2	16.3	17.8	15.8	20.0	20.4	-47.1%
Finland	39.9	45.5	57.4	50.5	52.1	54.0	54.0	56.7	55.3	63.6	57.1	9.7%
France	434.6	431.8	473.0	374.3	367.7	349.9	362.3	389.8	355.2	357.6	337.6	-8.2%
Germany	993.1	976.5	1 076.4	1 022.5	970.9	875.8	841.8	811.4	742.2	775.3	752.5	-22.5%
Greece	25.3	35.4	45.4	55.9	69.2	72.6	85.3	93.1	88.2	81.1	79.2	14.4%
Hungary	58.2	67.4	80.7	78.8	68.1	59.4	55.0	57.3	48.0	49.3	47.7	-30.0%
Iceland	1.4	1.6	1.8	1.6	2.0	1.9	2.1	2.2	2.0	1.9	1.9	-6.3%
Ireland	22.5	21.8	26.3	27.2	30.9	31.5	40.0	41.4	40.3	38.8	35.8	15.8%
Italy	280.3	311.2	349.0	339.6	384.0	413.0	433.6	458.8	391.0	396.6	390.0	1.6%
Luxembourg	15.2	13.1	12.0	10.0	10.3	8.2	8.0	11.5	10.0	10.6	10.4	0.8%
Netherlands	130.4	138.0	155.7	147.2	158.5	172.3	174.5	182.6	178.9	190.7	177.9	12.2%
Norway	23.4	24.0	28.6	27.1	28.5	31.8	37.0	37.6	46.9	51.4	41.7	46.1%
Poland	310.3	367.5	450.4	445.3	363.3	340.0	294.6	301.6	294.8	316.1	313.7	-13.6%
Portugal	14.9	18.9	24.6	25.5	38.5	49.4	59.9	63.4	53.7	48.7	48.5	25.9%
Slovak Republic	48.3	55.0	60.9	59.4	54.5	42.3	37.4	38.9	34.0	36.2	34.2	-37.2%
Slovenia	..	..	..	..	13.5	14.2	13.9	15.7	15.2	15.4	15.3	13.5%
Spain	121.5	162.0	192.0	187.5	212.1	239.0	286.8	342.2	285.9	268.2	270.9	27.7%
Sweden	84.5	80.9	72.0	61.8	51.8	54.7	49.5	51.3	43.0	51.7	50.9	-1.6%
Switzerland	39.7	37.4	39.8	39.5	42.9	40.3	40.9	43.6	43.8	41.0	39.0	-9.0%
Turkey	43.7	62.4	73.3	99.7	138.2	157.3	203.5	219.7	256.2	273.8	298.9	116.2%
United Kingdom	644.9	596.3	584.7	560.8	564.0	541.7	544.2	543.1	475.3	490.5	450.6	-20.1%
OECD Europe ***	3 727.9	3 830.0	4 223.1	4 009.6	4 037.9	3 930.0	4 001.2	4 143.0	3 806.0	3 926.6	3 809.1	-5.7%
<i>European Union - 27</i>	..	..	..	..	4 132.0	3 915.1	3 875.7	4 012.7	3 609.1	3 712.5	3 591.1	-13.1%

* Total world includes non-OECD total, OECD total as well as international marine bunkers and international aviation bunkers.

** Includes Estonia and Slovenia prior to 1990.

*** Excludes Estonia and Slovenia prior to 1990.

CO₂ emissions: Reference Approachmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	4 638.3	5 726.6	7 112.3	8 133.5	9 652.3	9 688.4	10 484.0	13 850.8	16 540.1	17 883.1	18 829.1	95.1%
Albania	4.1	4.8	8.0	7.5	6.5	1.9	3.0	4.2	3.3	3.7	4.0	-39.4%
Armenia	..	..	..	..	20.5	3.4	3.4	4.1	4.3	4.0	4.7	-77.3%
Azerbaijan	..	..	..	..	56.7	35.8	29.0	32.2	27.5	26.8	29.6	-47.8%
Belarus	..	..	..	..	127.2	63.0	60.0	63.9	63.8	64.6	69.7	-45.2%
Bosnia and Herzegovina	..	..	..	..	24.0	3.4	13.7	15.8	20.2	20.7	23.6	-1.7%
Bulgaria	63.8	73.0	84.2	85.1	74.8	57.3	43.5	47.8	43.0	45.1	50.0	-33.2%
Croatia	..	..	..	..	21.5	16.0	17.9	21.0	20.0	19.3	19.0	-11.9%
Cyprus **	1.8	1.7	2.6	2.8	4.1	5.0	6.3	6.6	7.5	7.1	6.8	65.4%
Georgia	..	..	..	..	30.3	7.2	4.4	4.4	5.5	5.1	6.4	-79.0%
Gibraltar	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.5	0.5	0.5	197.1%
Kazakhstan	..	..	..	..	240.9	171.2	116.3	166.0	202.1	235.3	247.1	2.6%
Kosovo ***	..	..	..	..	..	..	5.0	6.5	8.3	8.6	8.5	..
Kyrgyzstan	..	..	..	..	22.5	4.4	4.4	4.9	5.2	6.3	6.7	-70.3%
Latvia	..	..	..	..	18.7	9.1	6.7	7.3	7.2	8.0	7.6	-59.4%
Lithuania	..	..	..	..	33.5	14.4	10.8	13.9	12.9	13.9	13.8	-59.0%
FYR of Macedonia	..	..	..	..	8.6	8.2	8.5	8.9	8.6	8.4	9.2	6.7%
Malta	0.6	0.6	1.0	1.1	2.3	2.2	2.1	2.7	2.4	2.6	2.5	10.4%
Republic of Moldova	..	..	..	..	30.2	12.1	6.6	7.8	7.4	8.0	8.0	-73.6%
Montenegro ***	..	..	..	..	..	..	..	1.7	1.6	2.5	2.5	..
Romania	111.6	138.9	177.8	178.9	172.2	128.5	88.6	94.3	79.1	77.3	82.7	-52.0%
Russian Federation	..	..	..	..	2 337.2	1 620.4	1 545.2	1 579.8	1 528.6	1 678.2	1 743.3	-25.4%
Serbia ***	..	..	..	..	63.1	45.3	43.6	50.8	47.2	46.9	50.7	-19.6%
Tajikistan	..	..	..	..	11.2	2.4	2.2	2.3	2.8	2.9	3.0	-73.1%
Turkmenistan	..	..	..	..	46.0	34.1	37.5	48.3	50.2	57.2	62.0	34.9%
Ukraine	..	..	..	..	700.0	428.3	325.8	335.3	269.4	287.5	299.1	-57.3%
Uzbekistan	..	..	..	..	120.6	104.8	123.9	113.3	108.1	104.8	114.3	-5.2%
Former Soviet Union ****	2 368.9	2 842.6	3 242.5	3 448.3	..	..	..	..	..	..	..	..
Former Yugoslavia ****	65.5	77.1	101.5	127.2	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	2 616.4	3 138.8	3 617.7	3 851.1	4 172.9	2 778.7	2 508.8	2 644.3	2 536.5	2 745.3	2 875.1	-31.1%
Algeria	9.8	15.0	29.0	46.4	54.7	59.8	66.0	80.1	101.1	98.8	104.0	90.0%
Angola	1.7	2.1	2.7	2.9	4.1	3.9	5.1	7.1	13.9	15.6	15.5	276.3%
Benin	0.3	0.5	0.4	0.5	0.2	0.2	1.5	2.3	4.1	4.5	4.7	+
Botswana	..	..	..	1.6	2.9	3.3	4.2	4.4	4.3	5.0	4.7	61.1%
Cameroon	0.7	1.0	1.7	2.5	2.7	2.6	3.0	3.2	6.2	6.3	5.2	91.3%
Congo	0.6	0.6	0.7	0.9	0.7	0.6	0.5	1.0	1.7	2.0	2.3	215.6%
Dem. Rep. of Congo	2.7	2.9	2.9	3.4	4.1	3.0	1.7	2.3	2.7	3.1	3.3	-19.7%
Côte d'Ivoire	2.4	3.1	3.4	2.5	2.9	3.7	6.6	6.5	5.9	6.0	6.3	121.7%
Egypt	20.2	25.6	38.6	67.3	83.9	88.1	99.6	153.7	173.9	179.0	188.9	125.0%
Eritrea	..	..	..	..	..	0.8	0.6	0.8	0.5	0.5	0.5	..
Ethiopia	1.4	1.2	1.4	1.4	2.4	2.6	3.2	4.5	5.8	5.5	5.9	143.8%
Gabon	1.7	2.1	2.2	1.9	1.1	1.2	1.3	1.7	2.1	2.2	2.2	106.3%
Ghana	1.9	2.5	2.2	2.5	2.8	3.6	5.4	6.3	8.6	10.4	11.3	297.0%
Kenya	3.2	3.4	4.3	4.6	5.7	5.7	7.7	7.5	11.0	11.7	11.9	107.9%
Libya	3.8	9.9	17.2	24.7	27.2	34.8	39.6	45.4	52.6	56.1	35.0	28.5%
Morocco	6.8	9.9	13.9	16.4	20.2	25.2	30.0	40.4	42.7	46.9	50.0	148.3%
Mozambique	3.0	2.4	2.4	1.5	1.0	1.1	1.5	1.5	2.2	2.5	2.9	185.1%
Namibia	..	..	..	..	..	1.7	1.8	2.5	3.0	3.1	3.1	..
Nigeria	5.9	11.8	26.9	33.2	38.2	34.1	43.5	59.9	44.2	53.5	55.6	45.4%
Senegal	1.2	1.6	2.0	1.9	2.2	2.5	3.7	4.7	5.3	5.7	5.8	166.9%
South Africa	149.7	176.2	215.3	288.5	291.6	334.1	345.9	410.8	462.2	458.0	451.9	55.0%
Sudan	4.1	3.9	3.9	4.3	5.6	4.7	7.1	10.2	15.9	15.5	14.8	165.5%
United Rep. of Tanzania	2.1	1.9	2.2	2.0	2.0	3.0	2.3	5.0	5.4	5.8	6.3	206.8%
Togo	0.3	0.3	0.4	0.3	0.6	0.6	1.0	1.0	1.1	1.2	1.2	118.7%
Tunisia	3.7	5.0	8.0	10.1	12.3	14.0	17.4	19.6	21.1	22.2	21.6	75.5%
Zambia	3.4	3.3	3.4	2.9	2.7	2.1	1.7	2.2	1.8	1.9	2.2	-18.4%
Zimbabwe	7.9	7.7	8.0	9.6	15.4	15.3	12.7	10.5	8.0	8.7	9.5	-38.3%
Other Africa	7.3	8.7	11.3	12.1	14.6	17.2	20.0	24.3	30.3	30.2	31.6	116.3%
Africa	246.0	302.9	404.5	545.8	602.2	669.7	734.3	919.4	1 037.5	1 061.9	1 058.3	75.8%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

CO₂ emissions: Reference Approach

 million tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	3.4	4.7	7.2	9.3	14.1	21.3	26.7	38.4	50.8	54.3	55.4	291.8%
Brunei Darussalam	0.4	1.7	3.2	4.3	4.0	5.3	5.8	5.3	7.4	7.8	9.3	131.4%
Cambodia	..	..	..	..	..	1.5	2.1	2.9	3.8	3.9	4.2	..
Chinese Taipei	31.2	43.2	75.1	74.8	118.5	162.7	229.1	269.0	252.9	273.0	273.7	131.0%
India	198.5	238.4	283.5	419.2	590.8	791.0	973.6	1 200.4	1 693.1	1 761.5	1 806.2	205.7%
Indonesia	25.5	39.3	71.8	88.1	145.4	220.2	276.0	341.9	385.3	411.7	408.9	181.3%
DPR of Korea	69.4	79.6	108.6	129.8	117.6	75.8	68.7	73.9	66.4	63.9	64.9	-44.8%
Malaysia	13.8	16.9	28.9	37.5	53.6	85.4	117.4	166.8	177.1	191.7	196.9	267.6%
Mongolia	..	..	..	11.6	12.7	10.1	8.8	9.5	11.8	12.7	13.1	3.3%
Myanmar	4.7	4.2	5.3	6.1	4.2	6.8	10.0	12.0	9.2	8.5	8.4	100.8%
Nepal	0.2	0.3	0.5	0.5	0.9	1.8	3.1	3.0	3.4	4.1	4.1	344.6%
Pakistan	17.1	21.3	26.6	40.0	61.3	82.0	103.7	123.3	138.9	139.8	139.3	127.1%
Philippines	23.5	28.7	33.3	26.2	38.5	57.7	67.4	70.4	67.2	78.1	77.7	101.6%
Singapore	7.0	9.7	14.1	16.2	29.4	50.7	50.6	43.9	59.3	71.6	68.4	132.5%
Sri Lanka	2.9	2.9	3.9	3.7	4.0	5.8	10.6	12.4	12.1	13.1	15.7	294.3%
Thailand	17.3	21.8	34.3	40.7	81.2	140.9	155.3	215.6	218.3	236.5	242.7	198.9%
Vietnam	16.1	16.7	14.8	17.1	17.2	27.8	44.0	79.7	113.8	129.6	136.1	691.0%
Other Asia	8.3	10.1	16.4	10.0	10.1	9.4	11.2	14.8	18.3	21.6	23.2	128.6%
Asia	439.4	539.6	727.7	935.4	1 303.5	1 756.1	2 164.3	2 683.2	3 289.0	3 483.3	3 548.1	172.2%
People's Rep. of China	867.1	1 133.2	1 488.8	1 793.2	2 394.3	2 945.4	3 305.7	5 427.0	7 122.2	7 881.1	8 621.3	260.1%
Hong Kong, China	9.1	11.1	14.3	22.8	30.9	34.9	39.2	40.1	47.1	42.1	47.0	52.2%
China	876.2	1 144.3	1 503.1	1 816.0	2 425.2	2 980.3	3 344.8	5 467.1	7 169.3	7 923.3	8 668.3	257.4%
Argentina	86.0	89.8	101.2	92.7	106.8	118.0	134.1	147.7	171.6	177.3	181.1	69.6%
Bolivia	2.2	3.4	4.6	4.3	4.8	7.6	7.4	11.2	13.1	14.2	14.9	212.4%
Brazil	93.9	143.9	189.8	180.5	205.0	253.4	309.9	330.0	345.6	398.1	417.0	103.4%
Colombia	27.2	32.0	35.0	39.1	48.9	57.9	57.6	60.1	69.1	73.3	69.0	41.2%
Costa Rica	1.4	1.8	2.3	2.0	2.9	4.0	4.9	5.3	6.4	6.5	6.7	127.8%
Cuba	20.1	23.7	31.1	32.2	32.3	23.0	27.2	25.8	32.1	29.7	28.7	-10.9%
Dominican Republic	3.4	5.6	6.5	7.1	9.0	13.2	19.6	18.0	18.3	18.8	19.5	116.1%
Ecuador	3.3	6.2	10.8	12.0	12.7	16.1	18.5	28.1	31.7	31.0	31.5	148.3%
El Salvador	1.5	2.1	1.8	1.9	2.3	4.8	5.3	5.9	5.9	5.8	6.2	164.5%
Guatemala	2.4	2.6	4.3	3.3	3.6	5.8	9.0	10.6	11.1	10.3	10.4	189.5%
Haiti	0.4	0.4	0.6	0.8	0.9	0.9	1.4	2.0	2.2	2.0	2.1	126.5%
Honduras	1.1	1.3	1.7	1.6	2.2	3.5	4.5	6.9	7.1	7.3	7.6	253.1%
Jamaica	5.2	7.4	6.4	4.5	7.1	8.4	10.0	10.2	7.5	7.1	7.6	7.2%
Netherlands Antilles *	13.6	9.6	10.0	4.9	4.0	3.3	4.3	4.2	5.8	4.5	5.4	35.9%
Nicaragua	1.5	1.9	1.9	1.9	1.7	2.6	3.4	4.1	4.2	4.3	4.6	161.5%
Panama	3.7	3.7	2.6	2.8	2.6	4.1	5.3	6.7	7.7	8.7	9.9	286.8%
Paraguay	0.6	0.7	1.4	1.4	1.9	3.5	3.2	3.4	4.1	4.7	4.9	153.0%
Peru	16.1	19.4	21.8	18.4	18.2	22.8	26.1	29.3	37.1	40.2	43.2	136.8%
Trinidad and Tobago	5.0	4.8	8.3	11.0	12.7	12.8	21.8	33.2	40.5	42.7	41.7	228.1%
Uruguay	5.8	5.9	6.0	3.4	4.0	4.7	6.1	5.6	7.6	6.5	7.6	89.9%
Venezuela	43.6	60.3	88.8	99.2	104.9	116.6	124.8	151.6	157.9	176.3	160.1	52.6%
Other Non-OECD Americas	11.6	15.5	15.1	9.3	12.5	13.4	14.3	15.3	16.9	18.5	18.6	49.1%
Non-OECD Americas	349.8	442.1	551.9	534.2	601.1	700.5	818.7	915.4	1 003.4	1 088.2	1 098.6	82.7%
Bahrain	3.1	4.8	6.3	9.8	10.2	11.6	13.8	17.3	22.1	22.5	22.6	122.0%
Islamic Republic of Iran	43.5	70.1	105.2	150.6	186.9	266.6	322.7	443.4	529.2	519.6	519.6	178.1%
Iraq	11.2	16.4	27.1	39.9	56.2	99.7	74.1	75.4	92.1	107.0	112.6	100.2%
Jordan	1.4	2.2	4.4	7.6	9.4	12.4	14.1	18.4	19.5	19.0	19.6	108.9%
Kuwait	14.0	15.1	26.0	37.5	24.1	38.3	50.6	72.4	83.1	84.4	82.9	244.7%
Lebanon	5.0	6.0	6.9	6.6	5.5	12.8	14.1	14.5	19.3	18.3	18.5	235.6%
Oman	0.7	0.7	3.1	5.5	10.8	15.7	20.0	26.0	42.8	56.6	61.5	471.4%
Qatar	2.2	4.9	7.7	12.3	13.9	17.7	23.6	36.7	54.9	62.4	71.5	412.9%
Saudi Arabia	17.8	22.8	86.3	119.6	143.2	216.9	245.2	341.7	417.6	461.4	441.2	208.0%
Syrian Arab Republic	7.2	9.0	12.3	21.9	29.6	33.8	40.6	55.8	58.0	56.9	52.6	77.7%
United Arab Emirates	2.4	4.9	18.9	34.8	50.5	67.6	80.3	100.6	143.0	149.1	157.2	211.2%
Yemen	1.9	1.8	3.4	4.8	7.1	9.9	13.9	19.3	22.6	24.1	20.9	192.4%
Middle East	110.5	158.8	307.5	451.0	547.5	803.1	913.0	1 221.4	1 504.3	1 581.2	1 580.8	188.7%

* Reference Approach emissions for the Netherlands Antilles in 1990 are overstated as data for lubricants and bitumen (which store carbon) are not available.

CO₂ emissions from international marine bunkersmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World	344.85	332.41	348.39	298.28	362.28	421.02	486.02	557.33	593.19	643.91	645.13	78.1%
<i>Annex I Parties</i>	..	..	..	..	233.38	229.76	250.32	271.44	252.21	263.89	265.26	13.7%
<i>Annex II Parties</i>	202.63	216.81	234.71	171.25	223.14	226.46	245.20	262.90	244.22	250.28	248.81	11.5%
<i>North America</i>	26.41	36.12	93.91	56.43	93.55	93.68	92.24	83.63	78.67	84.81	85.13	-9.0%
<i>Europe</i>	120.20	110.37	97.05	87.88	108.75	110.94	132.31	155.74	146.58	147.34	147.56	35.7%
<i>Asia Oceania</i>	56.02	70.31	43.75	26.94	20.84	21.84	20.65	23.53	18.97	18.12	16.12	-22.7%
<i>Annex I EIT</i>	..	..	..	..	9.78	2.58	1.80	3.14	3.56	7.82	12.11	23.9%
<i>Non-Annex I Parties</i>	..	..	..	..	128.90	191.27	235.70	285.89	340.99	380.02	379.87	194.7%
<i>Annex I Kyoto Parties</i>	..	..	..	..	142.24	138.53	158.09	184.29	171.23	175.47	177.47	24.8%
Non-OECD Total *	137.93	112.19	109.88	121.69	130.74	167.60	201.52	249.62	313.61	357.46	361.26	176.3%
OECD Total **	206.91	220.22	238.51	176.59	231.54	253.42	284.50	307.71	279.58	286.45	283.87	22.6%
Canada	3.07	2.58	4.71	1.18	2.87	3.17	3.34	1.88	2.13	2.18	1.68	-41.5%
Chile	0.60	0.37	0.27	0.09	0.57	1.12	1.94	3.30	2.61	1.28	1.57	174.4%
Mexico	0.26	0.38	1.00	1.33	..	2.55	3.83	2.70	2.39	2.50	2.85	..
United States	23.34	33.54	89.20	55.26	90.68	90.51	88.90	81.76	76.54	82.63	83.46	-8.0%
OECD Americas	27.27	36.88	95.18	57.85	94.12	97.35	98.02	89.63	83.67	88.60	89.56	-4.8%
Australia	5.10	5.03	3.68	2.28	2.14	2.79	2.96	2.74	2.80	2.25	1.99	-6.7%
Israel	..	..	..	0.35	0.38	0.65	0.58	0.81	1.10	1.06	0.97	156.9%
Japan	49.88	64.20	38.90	23.92	17.66	17.92	16.93	19.80	15.08	14.80	13.12	-25.7%
Korea	1.53	0.17	0.31	1.69	5.27	21.35	30.46	33.24	26.81	28.75	27.96	430.7%
New Zealand	1.04	1.08	1.18	0.74	1.04	1.13	0.76	0.99	1.09	1.07	1.01	-3.3%
OECD Asia Oceania	57.55	70.48	44.06	28.98	26.49	43.84	51.69	57.58	46.88	47.93	45.05	70.1%
Austria	-	-	-	-	-	-	-	-	-	-	-	-
Belgium	8.06	8.64	7.52	7.30	12.91	12.31	17.02	24.40	22.34	24.29	21.59	67.3%
Czech Republic	-	-	-	-	-	-	-	-	-	-	-	-
Denmark	2.09	1.67	1.32	1.34	3.02	4.96	4.03	2.41	1.60	2.16	2.19	-27.5%
Estonia	..	..	..	..	0.57	0.28	0.33	0.38	0.71	0.69	0.59	4.2%
Finland	0.24	0.30	1.84	1.45	1.78	1.04	2.10	1.59	0.78	0.66	0.63	-64.9%
France	12.71	14.53	12.52	7.52	7.72	6.69	8.83	8.11	7.53	7.30	7.84	1.6%
Germany	12.93	10.52	11.00	10.85	7.79	6.43	6.85	7.83	8.57	8.72	8.57	10.0%
Greece	1.78	2.70	2.63	3.51	7.97	11.17	11.28	9.02	8.25	8.60	8.75	9.8%
Hungary	-	-	-	-	-	-	-	-	-	-	-	-
Iceland	..	..	..	0.02	0.10	0.14	0.21	0.20	0.16	0.18	0.19	101.2%
Ireland	0.24	0.20	0.23	0.09	0.06	0.36	0.47	0.32	0.35	0.26	0.30	430.4%
Italy	22.80	17.97	13.08	10.75	8.37	7.59	5.16	7.06	7.43	9.43	7.90	-5.6%
Luxembourg	-	-	-	-	-	-	-	-	-	-	-	-
Netherlands	28.26	32.86	29.39	27.45	34.29	35.59	41.98	53.31	44.61	43.72	46.98	37.0%
Norway	1.90	1.49	0.87	1.03	1.39	2.19	2.56	2.16	1.54	1.21	1.18	-15.3%
Poland	1.63	2.21	2.22	1.63	1.24	0.44	0.90	1.01	0.78	0.68	0.53	-56.9%
Portugal	2.32	2.00	1.34	1.48	1.91	1.52	2.08	1.82	1.51	1.46	1.78	-6.7%
Slovak Republic	-	-	-	-	-	-	-	-	-	-	-	-
Slovenia	..	..	..	..	..	..	..	0.07	0.10	0.06	0.10	..
Spain	5.94	3.44	5.07	6.76	11.46	10.00	18.97	25.00	27.52	26.53	27.14	136.8%
Sweden	3.58	3.45	2.66	1.76	2.09	3.30	4.28	6.12	6.70	6.19	5.43	159.5%
Switzerland	..	..	..	..	0.06	0.05	0.03	0.04	0.02	0.03	0.02	-55.6%
Turkey	0.26	0.29	..	0.25	0.37	0.58	1.25	3.31	0.85	1.15	0.47	26.6%
United Kingdom	17.37	10.60	7.57	6.56	7.84	7.62	6.44	6.34	7.67	6.60	7.08	-9.8%
OECD Europe **	122.10	112.87	99.26	89.76	110.93	112.23	134.79	160.50	149.02	149.93	149.26	34.6%
<i>European Union - 27</i>	..	..	..	..	111.25	111.38	133.91	159.39	152.64	154.15	153.25	37.8%

* Includes Estonia and Slovenia prior to 1990.

** Excludes Estonia and Slovenia prior to 1990.

CO₂ emissions from international marine bunkers

 million tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	137.93	112.19	109.88	121.69	130.74	167.60	201.52	249.62	313.61	357.46	361.26	176.3%
Albania	..	..	..	..	..	..	..	..	..	..	..	..
Armenia	..	..	..	..	..	..	..	..	..	..	..	..
Azerbaijan	..	..	..	..	..	..	..	..	0.22	0.23	0.24	..
Belarus	..	..	..	..	..	..	..	..	..	..	..	..
Bosnia and Herzegovina	..	..	..	..	..	..	..	..	..	..	..	..
Bulgaria	..	..	..	0.71	0.18	0.85	0.20	0.34	0.64	0.30	0.24	30.4%
Croatia	..	..	..	..	0.15	0.10	0.06	0.08	0.02	0.02	0.07	-49.3%
Cyprus **	0.01	0.06	0.05	0.11	0.18	0.21	0.60	0.90	0.68	0.58	0.61	242.3%
Georgia	..	..	..	..	..	0.16	..	..	..	..	..	..
Gibraltar	0.55	0.58	0.41	0.88	1.38	2.69	3.22	4.82	7.60	7.75	8.26	499.2%
Kazakhstan	..	..	..	..	..	..	..	..	..	..	0.06	..
Kosovo ***	..	..	..	..	..	..	..	..	..	..	..	..
Kyrgyzstan	..	..	..	..	..	..	..	..	..	..	..	..
Latvia	..	..	..	..	1.48	0.47	0.02	0.81	0.86	0.79	0.67	-54.6%
Lithuania	..	..	..	..	0.30	0.44	0.29	0.45	0.40	0.45	0.45	50.9%
FYR of Macedonia	..	..	..	..	..	..	..	..	..	..	..	..
Malta	0.19	0.08	0.09	0.06	0.09	0.14	2.07	2.09	3.57	4.64	3.86	+
Republic of Moldova	..	..	..	..	..	..	..	..	..	..	..	..
Montenegro ***	..	..	..	..	..	..	..	..	..	..	..	..
Romania	..	..	..	..	..	..	..	..	0.05	0.05	0.03	..
Russian Federation	..	..	..	..	5.87	..	..	..	..	4.79	9.43	60.7%
Serbia ***	..	..	..	..	..	..	..	..	..	..	..	..
Tajikistan	..	..	..	..	..	..	..	..	..	..	..	..
Turkmenistan	..	..	..	..	..	..	..	..	..	..	..	..
Ukraine	..	..	..	..	..	..	..	..	..	..	..	..
Uzbekistan	..	..	..	..	..	..	..	..	..	..	..	..
Former Soviet Union ****	13.17	14.09	14.09	13.79	..	..	..	..	..	..	..	..
Former Yugoslavia ****	..	..	..	..	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	13.92	14.81	14.64	15.53	9.62	5.06	6.45	9.49	14.04	19.59	23.93	148.7%
Algeria	0.61	0.77	1.29	1.16	1.36	1.17	0.77	1.17	0.91	1.01	0.80	-41.2%
Angola	0.77	0.48	0.83	0.10	0.02	0.03	..	0.35	0.60	0.57	0.52	+
Benin	..	..	..	..	..	..	..	..	..	..	..	..
Botswana	..	..	..	..	..	..	..	..	..	..	..	..
Cameroon	..	..	0.12	0.03	0.04	0.09	0.06	0.04	0.16	0.14	0.14	245.2%
Congo	..	..	..	..	..	..	..	..	..	..	..	..
Dem. Rep. of Congo	0.40	0.22	0.08	0.09	0.10	0.01	..	..	..	..	..	-100.0%
Côte d'Ivoire	0.06	0.01	1.35	0.73	0.12	0.27	0.29	0.35	0.05	0.06	0.04	-69.3%
Egypt	0.06	1.08	3.19	4.71	5.25	7.73	8.58	4.51	0.96	1.36	1.20	-77.2%
Eritrea	..	..	..	..	..	0.42	..	..	..	..	..	..
Ethiopia	0.07	0.01	0.01	0.03	0.04	0.52	..	..	..	..	..	-100.0%
Gabon	0.20	0.14	0.19	0.22	0.08	0.44	0.60	0.60	0.60	0.69	0.67	745.6%
Ghana	0.16	0.14	0.10	..	..	..	0.16	0.12	0.23	0.30	0.40	..
Kenya	1.47	1.05	0.56	0.45	0.55	0.17	0.21	0.00	0.02	0.05	0.08	-84.9%
Libya	0.01	0.01	0.02	0.04	0.25	0.28	1.02	1.39	1.15	1.15	0.35	42.5%
Morocco	0.24	0.18	0.21	0.04	0.06	0.04	0.05	0.05	0.03	0.40	0.40	533.7%
Mozambique	0.76	0.35	0.27	0.10	0.09	0.01	0.00	0.01	..	..	..	-100.0%
Namibia	..	..	..	..	..	..	..	..	..	..	..	..
Nigeria	0.02	0.11	0.25	0.34	0.58	1.42	1.15	1.55	1.98	2.14	2.30	295.2%
Senegal	2.99	2.09	0.84	0.33	0.11	0.09	0.30	0.36	0.19	0.20	0.21	83.9%
South Africa	10.81	7.15	5.25	3.41	5.95	10.30	8.51	8.52	5.52	9.72	9.54	60.3%
Sudan	..	0.01	0.02	0.02	0.02	0.03	0.03	0.04	0.06	0.06	0.07	200.0%
United Rep. of Tanzania	0.05	0.05	0.12	0.08	0.08	0.07	0.08	0.10	0.13	0.14	0.15	88.2%
Togo	..	..	..	..	..	..	0.01	0.01	0.01	0.01	0.02	..
Tunisia	0.06	0.02	0.02	0.01	0.07	0.06	0.06	0.05	0.08	0.04	0.06	-7.1%
Zambia	..	..	..	..	..	..	..	..	..	..	..	..
Zimbabwe	..	..	..	..	..	..	..	..	..	..	..	..
Other Africa	3.02	2.08	1.77	1.82	1.71	1.42	1.48	1.36	1.48	1.52	1.59	-7.0%
Africa	21.76	15.95	16.48	13.70	16.49	24.55	23.36	20.60	14.18	19.58	18.53	12.4%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

CO₂ emissions from international marine bunkersmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	0.06	0.05	0.19	0.07	0.06	0.11	0.11	0.11	0.11	0.11	0.11	78.6%
Brunei Darussalam	..	..	0.00	..	0.11	0.21	0.22	0.27	0.26	0.28	0.30	164.9%
Cambodia	..	..	..	..	..	..	..	..	..	..	..	..
Chinese Taipei	0.39	0.33	0.66	1.62	4.86	7.57	11.02	7.50	5.05	5.45	5.00	2.8%
India	0.71	0.57	0.72	0.34	0.47	0.39	0.27	0.08	0.42	0.32	0.37	-20.4%
Indonesia	0.70	1.09	0.79	0.68	1.68	1.28	0.36	0.42	0.52	0.56	0.60	-64.6%
DPR of Korea	..	..	..	..	..	..	..	..	..	..	..	..
Malaysia	0.11	0.22	0.18	0.31	0.29	0.53	0.69	0.19	0.15	0.19	0.64	120.6%
Mongolia	..	..	..	..	..	..	..	..	..	..	..	..
Myanmar	0.01	0.00	-	-	-	0.01	0.01	0.01	0.01	0.01	0.01	x
Nepal	-	-	-	-	-	-	-	-	-	-	-	-
Pakistan	0.29	0.21	0.47	0.08	0.11	0.05	0.08	0.25	0.73	0.55	0.31	194.1%
Philippines	1.29	0.45	0.59	0.49	0.21	0.35	0.67	0.38	0.63	0.58	0.68	228.7%
Singapore	8.89	10.43	14.96	15.14	33.87	35.28	57.58	78.60	112.19	125.94	133.02	292.8%
Sri Lanka	1.19	1.29	1.10	1.01	1.21	1.09	0.50	0.53	0.57	0.64	0.62	-48.8%
Thailand	0.21	0.25	0.50	0.65	1.70	3.02	2.46	5.18	4.75	4.42	3.33	95.7%
Vietnam	..	..	..	0.07	0.09	0.22	0.46	0.79	0.92	1.02	1.12	+
Other Asia	0.57	0.53	0.46	0.20	0.21	0.30	0.33	0.44	0.35	0.40	0.43	108.3%
Asia	14.42	15.43	20.62	20.66	44.86	50.40	74.76	94.76	126.66	140.48	146.54	226.6%
People's Rep. of China	0.80	1.36	2.23	2.88	4.29	8.86	8.66	15.89	22.58	27.62	29.17	579.5%
Hong Kong, China	1.96	1.69	2.83	3.11	4.52	7.16	10.61	17.79	32.35	38.59	28.98	540.8%
China	2.76	3.05	5.06	5.99	8.82	16.03	19.28	33.69	54.92	66.21	58.15	559.7%
Argentina	0.66	0.28	1.32	2.00	2.22	1.71	1.48	2.19	2.99	3.75	4.32	94.4%
Bolivia	-	-	-	-	-	-	-	-	-	-	-	-
Brazil	1.00	1.17	1.42	1.71	1.72	3.64	9.16	10.92	11.75	12.61	13.53	688.2%
Colombia	0.95	0.49	0.31	0.22	0.33	0.58	0.74	1.13	1.54	1.97	2.07	529.9%
Costa Rica	0.10	..	0.13	0.14	0.24	0.37	0.34	0.35	0.10	0.09	0.08	-66.7%
Cuba	..	..	..	0.12	0.05	0.05	0.06	0.09	0.09	0.09	0.09	81.8%
Dominican Republic	..	..	..	..	..	..	..	..	..	..	..	..
Ecuador	0.28	..	0.34	0.11	0.49	0.99	0.87	0.69	3.95	3.13	1.44	191.5%
El Salvador	..	..	..	..	..	..	..	..	..	..	..	..
Guatemala	0.18	0.27	0.40	0.38	0.43	0.53	0.64	0.74	0.86	0.89	0.92	117.2%
Haiti	..	..	..	..	..	..	..	..	..	..	..	..
Honduras	..	..	..	..	..	..	..	..	0.00	0.00	0.00	..
Jamaica	0.16	0.26	0.10	0.04	0.10	0.12	0.12	0.26	1.00	0.85	0.90	802.8%
Netherlands Antilles	7.71	7.34	7.27	6.13	5.18	5.32	6.28	6.71	7.06	7.18	7.27	40.5%
Nicaragua	..	..	..	..	..	..	..	..	..	..	..	..
Panama	1.71	3.41	3.10	4.02	4.95	6.43	8.06	7.29	8.21	8.63	7.64	54.4%
Paraguay	-	-	-	-	-	-	-	-	-	-	-	-
Peru	0.10	0.12	0.47	0.62	0.12	0.53	0.31	1.00	0.55	0.76	0.77	553.0%
Trinidad and Tobago	5.12	3.54	1.42	0.31	0.11	0.16	1.19	1.47	1.38	1.06	1.17	974.5%
Uruguay	0.27	0.20	0.24	0.33	0.37	1.21	0.92	1.12	1.60	1.41	1.17	218.9%
Venezuela	9.13	4.82	1.99	1.76	2.50	2.30	2.06	2.33	2.81	2.78	3.08	23.1%
Other Non-OECD Americas	3.08	2.04	2.79	1.87	0.86	0.71	0.79	0.64	0.54	0.58	0.60	-30.7%
Non-OECD Americas	30.43	23.94	21.31	19.77	19.66	24.61	33.01	36.94	44.45	45.79	45.07	129.2%
Bahrain	0.56	0.55	0.60	0.47	0.25	0.25	0.25	0.24	0.23	0.24	0.24	-3.8%
Islamic Republic of Iran	1.02	1.23	1.22	0.90	1.23	1.84	2.25	2.95	6.31	7.31	7.01	470.5%
Iraq	0.26	0.29	0.37	0.46	0.40	0.02	0.48	0.32	0.45	0.44	0.51	27.7%
Jordan	..	..	..	..	..	0.03	0.13	0.25	0.12	0.05	0.03	..
Kuwait	6.29	6.32	5.60	2.38	0.55	1.82	1.43	2.15	1.20	1.68	3.26	489.3%
Lebanon	0.71	0.03	..	..	..	0.04	0.05	0.06	0.07	0.08	0.08	..
Oman	3.85	2.54	0.71	0.35	0.06	0.08	0.19	0.12	0.38	0.57	0.45	635.0%
Qatar	..	..	..	..	..	..	..	..	..	..	..	..
Saudi Arabia	40.05	25.86	13.62	28.01	5.74	5.96	6.60	7.09	8.00	10.29	10.63	85.3%
Syrian Arab Republic	0.77	1.26	1.97	2.53	2.82	3.43	3.68	3.17	3.40	3.43	2.97	5.4%
United Arab Emirates	..	..	5.53	9.69	18.99	33.16	29.30	37.44	38.88	41.36	43.53	129.2%
Yemen	1.13	0.91	2.13	1.24	1.24	0.31	0.30	0.36	0.33	0.34	0.31	-74.6%
Middle East	54.64	39.00	31.76	46.04	31.28	46.95	44.66	54.14	59.36	65.80	69.04	120.7%

CO₂ emissions from international aviation bunkersmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World	167.33	171.81	199.82	222.64	256.41	288.20	350.42	416.10	430.51	452.49	468.51	82.7%
<i>Annex I Parties</i>	..	..	..	..	168.58	179.25	223.49	253.98	248.24	251.98	258.79	53.5%
<i>Annex II Parties</i>	58.57	61.75	70.77	81.47	131.19	159.76	204.47	229.79	220.84	223.75	230.56	75.7%
<i>North America</i>	16.61	17.53	21.18	21.83	41.50	48.54	60.20	70.76	65.49	68.03	68.32	64.6%
<i>Europe</i>	35.96	37.67	42.70	48.59	70.77	87.26	115.76	127.38	128.50	126.96	131.44	85.7%
<i>Asia Oceania</i>	6.01	6.55	6.90	11.05	18.92	23.96	28.52	31.65	26.85	28.76	30.80	62.7%
<i>Annex I EIT</i>	..	..	..	..	36.64	18.50	17.11	20.71	22.91	24.33	24.50	-33.1%
<i>Non-Annex I Parties</i>	..	..	..	..	87.83	108.94	126.93	162.12	182.28	200.51	209.72	138.8%
<i>Annex I Kyoto Parties</i>	..	..	..	..	129.04	132.30	164.47	182.30	180.59	183.42	190.34	47.5%
Non-OECD Total *	103.69	103.63	119.24	130.54	114.46	113.95	129.02	160.05	179.41	197.80	207.21	81.0%
OECD Total **	63.64	68.18	80.58	92.11	141.95	174.25	221.39	256.04	251.11	254.69	261.31	84.1%
Canada	1.25	1.93	1.35	1.22	2.71	2.58	3.08	2.55	2.33	3.37	3.60	33.0%
Chile	0.43	0.35	0.54	0.49	0.57	0.64	1.04	1.05	1.30	1.52	1.31	131.8%
Mexico	1.39	2.40	4.23	4.53	5.23	6.75	8.05	8.52	7.96	8.08	8.12	55.3%
United States	15.35	15.60	19.83	20.61	38.79	45.96	57.11	68.21	63.16	64.66	64.72	66.8%
OECD Americas	18.43	20.27	25.95	26.85	47.29	55.93	69.29	80.33	74.75	77.63	77.75	64.4%
Australia	1.57	1.89	2.40	2.76	4.29	5.75	7.15	8.08	9.24	10.09	10.17	136.8%
Israel	1.79	1.88	2.21	1.99	1.58	2.12	2.38	3.20	2.40	2.40	2.57	62.0%
Japan	3.80	4.32	3.92	7.63	13.31	16.61	19.57	21.37	15.43	16.36	18.30	37.5%
Korea	-	0.36	0.83	1.69	0.84	2.05	1.70	7.25	10.93	11.89	11.99	+
New Zealand	0.64	0.34	0.57	0.66	1.32	1.60	1.79	2.20	2.18	2.31	2.33	76.4%
OECD Asia Oceania	7.80	8.79	9.93	14.74	21.35	28.13	32.59	42.11	40.19	43.05	45.36	112.4%
Austria	0.28	0.24	0.38	0.65	0.86	1.28	1.63	1.89	1.83	1.98	2.06	140.6%
Belgium	1.21	1.05	1.22	1.62	2.82	2.61	4.37	3.80	5.72	4.56	4.36	55.0%
Czech Republic	0.69	0.58	0.85	0.63	0.65	0.56	0.48	0.94	1.00	0.92	0.91	40.4%
Denmark	1.92	1.56	1.59	1.56	1.70	1.84	2.32	2.55	2.30	2.40	2.46	44.3%
Estonia	..	..	..	..	0.10	0.05	0.06	0.14	0.10	0.11	0.10	-
Finland	0.18	0.40	0.46	0.48	0.97	0.86	1.02	1.24	1.51	1.59	1.88	92.8%
France	4.57	5.71	5.62	6.43	9.32	11.44	15.07	16.10	16.01	16.32	17.19	84.4%
Germany	7.57	8.16	8.22	9.46	13.34	15.76	19.50	22.56	24.29	23.98	23.14	73.4%
Greece	1.29	1.31	2.23	2.33	2.34	2.52	2.41	2.30	2.53	2.02	2.19	-6.4%
Hungary	0.15	0.20	0.36	0.44	0.49	0.54	0.69	0.79	0.70	0.70	0.71	45.0%
Iceland	0.22	0.13	0.09	0.18	0.22	0.20	0.39	0.40	0.33	0.37	0.41	88.7%
Ireland	0.96	0.73	0.60	0.57	1.03	1.11	1.73	2.35	1.64	2.14	2.00	94.1%
Italy	3.47	2.44	4.15	4.33	4.50	5.80	8.38	8.88	8.88	9.39	9.63	114.2%
Luxembourg	0.11	0.15	0.19	0.22	0.39	0.56	0.95	1.28	1.24	1.28	1.20	208.6%
Netherlands	2.01	2.26	2.72	3.47	4.29	7.38	9.65	10.67	10.25	10.00	10.39	141.9%
Norway	0.70	0.51	0.67	0.92	1.24	1.09	1.05	1.04	1.06	1.28	1.26	1.0%
Poland	0.52	0.53	0.67	0.67	0.68	0.82	0.82	0.96	1.44	1.52	1.38	103.6%
Portugal	0.70	0.80	0.88	1.27	1.49	1.49	1.69	2.13	2.43	2.63	2.69	80.8%
Slovak Republic	-	-	-	-	-	0.12	0.08	0.12	0.13	0.12	0.13	x
Slovenia	..	..	..	..	0.08	0.06	0.07	0.07	0.08	0.08	0.07	-11.5%
Spain	1.74	2.77	2.58	2.67	3.32	6.01	8.03	9.18	9.40	9.02	10.80	225.2%
Sweden	0.33	0.33	0.49	0.51	1.07	1.76	2.06	1.87	2.11	2.04	2.19	104.2%
Switzerland	1.63	1.80	2.02	2.41	3.00	3.63	4.57	3.48	3.98	4.16	4.47	49.0%
Turkey	0.09	0.14	0.12	0.18	0.53	0.78	1.54	3.21	4.22	3.60	3.45	547.4%
United Kingdom	7.08	7.32	8.59	9.53	18.86	21.92	30.93	35.65	33.00	31.80	33.11	75.6%
OECD Europe **	37.41	39.12	44.70	50.51	73.30	90.19	119.51	133.61	136.17	134.01	138.20	88.5%
<i>European Union - 27</i>	..	..	..	..	71.25	87.23	113.89	127.81	128.90	127.14	131.05	83.9%

* Includes Estonia and Slovenia prior to 1990.

** Excludes Estonia and Slovenia prior to 1990.

CO₂ emissions from international aviation bunkersmillion tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	103.69	103.63	119.24	130.54	114.46	113.95	129.02	160.05	179.41	197.80	207.21	81.0%
Albania	-	-	-	-	-	-	0.12	0.17	0.05	0.05	0.06	x
Armenia	..	..	..	..	0.59	0.10	0.19	0.13	0.09	0.13	0.13	-77.3%
Azerbaijan	..	..	..	..	1.03	0.30	0.30	1.10	0.92	1.19	1.29	25.0%
Belarus	..	..	..	..	-	-	-	-	-	-	-	-
Bosnia and Herzegovina	..	..	..	..	0.08	0.11	0.03	0.02	0.02	0.02	0.02	-80.0%
Bulgaria	0.61	0.61	0.91	1.11	0.71	0.98	0.24	0.56	0.45	0.50	0.50	-28.9%
Croatia	..	..	..	..	0.15	0.17	0.10	0.12	0.13	0.16	0.16	10.4%
Cyprus **	0.15	0.02	0.23	0.44	0.72	0.79	0.82	0.89	0.81	0.82	0.89	24.6%
Georgia	..	..	..	..	0.60	0.01	0.05	0.11	0.12	0.12	0.11	-82.2%
Gibraltar	0.02	0.02	0.01	0.01	0.02	0.01	0.01	0.02	0.02	0.02	0.02	-
Kazakhstan	..	..	..	..	2.68	0.78	0.23	0.49	0.53	0.86	0.74	-72.5%
Kosovo ***	..	..	..	..	..	..	-	-	0.05	0.04	0.04	..
Kyrgyzstan	..	..	..	..	0.26	0.19	0.12	0.15	0.88	1.01	0.82	212.8%
Latvia	..	..	..	..	0.22	0.08	0.08	0.17	0.30	0.35	0.35	60.6%
Lithuania	..	..	..	..	0.40	0.12	0.07	0.14	0.11	0.14	0.16	-58.8%
FYR of Macedonia	..	..	..	..	0.02	0.09	0.09	0.02	0.01	0.02	0.01	-20.0%
Malta	0.17	0.18	0.23	0.14	0.21	0.22	0.37	0.26	0.27	0.30	0.28	31.4%
Republic of Moldova	..	..	..	..	0.22	0.03	0.06	0.04	0.04	0.04	0.04	-81.9%
Montenegro ***	..	..	..	..	..	..	..	0.04	0.01	0.01	0.03	..
Romania	0.06	0.05	-	-	0.69	0.54	0.37	0.33	0.38	0.43	0.25	-64.3%
Russian Federation	..	..	..	..	26.37	13.99	13.27	15.27	17.36	18.49	19.04	-27.8%
Serbia ***	..	..	..	..	0.43	0.11	0.09	0.15	0.12	0.12	0.14	-67.1%
Tajikistan	..	..	..	..	0.05	0.02	0.01	0.03	0.08	0.09	0.09	106.7%
Turkmenistan	..	..	..	..	0.75	0.61	0.97	1.34	1.46	1.61	1.46	94.3%
Ukraine	..	..	..	..	6.11	0.47	0.78	1.11	0.72	0.82	0.73	-88.0%
Uzbekistan	..	..	..	..	-	-	-	-	-	-	-	-
Former Soviet Union ****	66.66	62.09	70.62	76.70	..	..	..	..	..	..	..	..
Former Yugoslavia ****	0.64	0.88	1.00	0.99	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	68.31	63.86	73.00	79.40	42.29	19.74	18.34	22.65	24.93	27.33	27.38	-35.3%
Algeria	0.29	0.66	0.93	1.31	1.09	0.96	1.17	1.16	1.42	1.42	1.43	31.6%
Angola	0.23	0.31	0.25	0.99	1.03	1.17	1.42	0.56	0.61	0.62	0.64	-37.4%
Benin	0.02	0.01	0.03	0.06	0.05	0.07	0.07	0.03	0.27	0.47	0.49	862.5%
Botswana	..	..	..	0.01	0.03	0.02	0.02	0.03	0.05	0.05	0.05	54.5%
Cameroon	0.17	0.10	0.15	0.15	0.15	0.17	0.18	0.20	0.21	0.21	0.21	41.7%
Congo	-	0.05	0.11	0.09	0.08	0.05	0.10	0.14	0.19	0.19	0.18	133.3%
Dem. Rep. of Congo	0.28	0.24	0.37	0.40	0.32	0.35	0.24	0.50	0.05	0.46	0.50	54.3%
Côte d'Ivoire	0.13	0.21	0.26	0.28	0.27	0.26	0.37	0.28	0.17	0.21	0.14	-46.4%
Egypt	0.21	0.27	0.51	0.12	0.44	0.79	1.71	2.23	3.00	2.55	2.43	450.7%
Eritrea	..	..	..	..	..	0.02	0.03	0.03	0.00	0.00	0.00	..
Ethiopia	0.14	0.16	0.20	0.34	0.53	0.20	0.24	0.46	0.78	1.01	1.08	104.3%
Gabon	0.03	0.04	0.07	0.08	0.20	0.19	0.23	0.21	0.17	0.18	0.19	-3.6%
Ghana	0.13	0.15	0.12	0.10	0.14	0.18	0.32	0.39	0.41	0.36	0.44	218.6%
Kenya	0.57	0.89	1.10	0.82	0.83	1.37	1.36	1.76	1.80	1.70	2.12	155.1%
Libya	0.27	0.53	0.89	1.05	0.63	0.91	1.33	0.51	0.68	0.70	0.28	-55.5%
Morocco	0.35	0.44	0.78	0.70	0.79	0.73	0.90	1.16	1.54	1.77	1.78	126.1%
Mozambique	0.12	0.05	0.08	0.09	0.13	0.06	0.13	0.14	0.21	0.20	0.19	43.9%
Namibia	..	..	..	..	..	0.10	0.12	0.04	0.11	0.12	0.12	..
Nigeria	0.24	0.70	1.14	1.33	0.95	1.25	0.58	0.70	2.00	0.51	0.57	-39.7%
Senegal	0.30	0.37	0.58	0.43	0.45	0.45	0.75	0.74	0.63	0.64	0.64	41.7%
South Africa	0.53	0.73	0.87	0.93	1.09	1.58	2.79	2.15	2.45	2.40	2.54	132.0%
Sudan	0.34	0.14	0.20	0.21	0.09	0.10	0.33	0.97	0.81	0.84	0.97	925.1%
United Rep. of Tanzania	0.08	0.20	0.17	0.13	0.22	0.19	0.18	0.26	0.31	0.32	0.34	54.6%
Togo	-	-	-	-	0.10	0.12	0.03	0.15	0.19	0.20	0.21	103.0%
Tunisia	0.39	0.38	0.56	0.30	0.57	0.74	0.85	0.65	0.60	0.75	0.72	26.3%
Zambia	0.04	0.14	0.23	0.12	0.19	0.10	0.13	0.16	0.09	0.09	0.10	-49.2%
Zimbabwe	0.07	0.17	0.19	0.32	0.23	0.33	0.35	0.02	0.02	0.02	0.03	-88.9%
Other Africa	-	-	0.90	0.90	0.90	0.95	1.50	1.72	1.84	1.89	1.98	119.0%
Africa	4.91	6.93	10.70	11.28	11.51	13.39	17.42	17.36	20.60	19.89	20.38	77.0%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

CO₂ emissions from international aviation bunkers

 million tonnes of CO₂

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	0.06	0.08	0.15	0.22	0.27	0.30	0.38	0.87	0.84	0.89	0.95	250.0%
Brunei Darussalam	0.00	0.06	0.07	0.05	0.11	0.21	0.21	0.25	0.27	0.33	0.34	197.2%
Cambodia	..	..	..	..	..	0.03	0.04	0.05	0.07	0.08	0.08	..
Chinese Taipei	1.48	1.62	1.66	0.92	1.79	4.09	5.38	6.46	5.54	6.25	6.24	247.7%
India	1.68	1.98	2.49	3.21	3.71	4.60	4.97	7.28	10.23	11.22	12.23	230.1%
Indonesia	0.16	0.32	0.73	0.65	0.96	1.17	1.21	1.52	1.90	2.01	2.15	123.0%
DPR of Korea	-	-	-	-	-	-	-	-	-	-	-	-
Malaysia	0.42	0.74	0.77	0.86	1.88	3.44	4.67	5.96	6.30	7.07	7.58	304.3%
Mongolia	..	..	..	-	0.01	0.06	0.06	0.06	0.05	0.05	0.08	525.0%
Myanmar	0.03	0.02	0.03	0.03	0.02	0.02	0.05	0.03	0.05	0.06	0.06	200.0%
Nepal	0.01	0.02	0.04	0.06	0.05	0.11	0.17	0.19	0.21	0.26	0.28	466.7%
Pakistan	1.13	1.08	1.69	1.41	1.39	1.70	0.36	0.63	0.55	0.48	0.61	-56.0%
Philippines	0.70	0.82	0.66	1.02	1.01	1.16	1.42	2.12	2.89	2.93	3.17	215.2%
Singapore	0.70	1.32	2.71	3.19	5.63	7.81	11.89	13.45	15.09	17.02	18.33	225.5%
Sri Lanka	-	0.00	0.00	-	-	-	0.32	0.93	0.28	0.35	0.96	x
Thailand	1.26	2.17	2.39	3.12	5.58	7.51	8.27	10.17	10.49	11.15	12.02	115.2%
Vietnam	6.88	2.60	-	-	-	0.12	0.30	0.94	1.51	2.01	2.39	x
Other Asia	0.66	0.52	0.33	0.47	0.51	0.33	0.61	0.83	0.69	0.90	0.96	86.3%
Asia	15.16	13.36	13.71	15.20	22.93	32.67	40.28	51.74	56.93	63.05	68.42	198.3%
People's Rep. of China	-	-	0.10	0.84	1.32	2.21	4.17	10.70	13.60	16.45	18.40	+
Hong Kong, China	1.41	1.83	2.24	2.55	5.62	9.22	8.31	14.71	14.06	16.20	17.40	209.4%
China	1.41	1.83	2.35	3.39	6.94	11.43	12.48	25.41	27.66	32.64	35.79	415.4%
Argentina	-	-	-	-	-	1.58	2.83	2.14	1.40	1.95	1.96	x
Bolivia	-	-	-	-	-	-	0.14	0.15	0.13	0.14	0.15	x
Brazil	-	-	0.61	0.74	1.41	2.06	2.00	3.30	4.90	5.78	6.36	350.4%
Colombia	0.59	0.92	1.31	1.31	1.56	2.14	1.89	1.83	1.79	2.08	2.24	43.5%
Costa Rica	-	-	-	-	0.01	0.31	0.36	0.57	0.48	0.49	0.51	+
Cuba	0.27	0.43	0.65	0.89	0.98	0.53	0.64	0.53	0.43	0.43	0.37	-62.4%
Dominican Republic	0.08	0.10	0.17	0.16	0.11	0.17	0.22	0.30	0.29	0.30	0.32	177.8%
Ecuador	0.27	0.14	0.45	0.45	0.39	0.55	0.66	0.96	1.03	1.03	1.05	171.5%
El Salvador	0.03	0.05	0.06	0.11	0.11	0.16	0.22	0.24	0.35	0.34	0.35	205.6%
Guatemala	0.15	0.11	0.13	0.12	0.13	0.14	0.15	0.23	0.07	0.12	0.12	-9.7%
Haiti	0.02	0.03	0.05	0.04	0.07	0.07	0.09	0.07	0.05	0.06	0.05	-26.1%
Honduras	0.02	0.03	0.06	0.12	0.09	0.07	0.11	0.07	0.15	0.15	0.07	-24.1%
Jamaica	0.42	0.33	0.30	0.39	0.46	0.52	0.53	0.60	0.52	0.76	0.57	23.8%
Netherlands Antilles	0.15	0.13	0.16	0.13	0.12	0.20	0.24	0.26	0.27	0.27	0.28	137.8%
Nicaragua	0.05	0.06	0.06	0.04	0.08	0.06	0.08	0.05	0.06	0.05	0.06	-26.8%
Panama	0.43	1.11	0.41	0.26	0.20	0.31	0.54	0.57	0.94	1.07	1.20	495.3%
Paraguay	0.03	0.04	0.06	0.06	0.03	0.03	0.04	0.05	0.06	0.07	0.07	144.8%
Peru	0.51	0.74	0.92	0.71	0.64	1.10	1.06	0.96	1.74	1.94	2.38	269.1%
Trinidad and Tobago	0.21	0.12	0.17	0.22	0.20	0.17	0.39	0.38	0.20	0.20	0.21	6.5%
Uruguay	-	-	-	-	-	-	0.12	0.12	0.21	0.23	0.28	x
Venezuela	0.29	0.37	0.73	0.81	1.02	1.00	0.94	2.03	0.48	1.88	0.42	-58.9%
Other Non-OECD Americas	1.10	0.63	0.90	0.86	1.02	1.06	1.79	1.38	1.42	1.51	1.55	52.4%
Non-OECD Americas	4.63	5.34	7.20	7.42	8.64	12.25	15.03	16.79	16.99	20.85	20.57	138.0%
Bahrain	0.43	0.84	1.53	1.21	1.43	1.15	1.12	1.72	2.10	1.97	1.83	28.3%
Islamic Republic of Iran	7.02	7.01	2.15	1.64	1.48	1.97	2.71	2.69	3.70	3.80	3.55	139.4%
Iraq	0.24	0.81	1.05	0.58	0.98	1.26	1.63	1.98	2.81	2.87	2.87	192.1%
Jordan	0.12	0.18	0.57	0.61	0.66	0.75	0.75	0.96	0.98	1.08	0.99	49.8%
Kuwait	0.34	0.34	1.04	0.97	0.51	1.12	1.15	1.82	2.41	2.24	2.16	321.7%
Lebanon	0.28	0.23	0.15	0.32	0.16	0.66	0.40	0.46	0.55	0.70	0.71	348.0%
Oman	0.01	0.15	0.38	0.57	0.93	0.46	0.65	1.24	0.98	1.24	1.18	26.7%
Qatar	-	0.16	0.23	0.24	0.34	0.43	0.57	1.43	2.98	3.75	4.66	+
Saudi Arabia	0.47	1.40	3.45	4.57	4.79	5.69	5.85	5.44	6.11	6.46	6.63	38.3%
Syrian Arab Republic	0.24	0.65	0.72	0.87	0.87	0.62	0.41	0.33	0.14	0.09	0.09	-89.5%
United Arab Emirates	0.02	0.34	0.80	1.80	9.79	10.08	9.87	7.67	9.13	9.47	9.80	0.0%
Yemen	0.09	0.18	0.21	0.46	0.17	0.28	0.38	0.36	0.41	0.36	0.20	12.8%
Middle East	9.26	12.31	12.30	13.84	22.13	24.47	25.47	26.11	32.29	34.04	34.67	56.6%

CO₂ emissions by sector in 2011 *million tonnes of CO₂

	Total CO ₂ emissions from fuel combustion	Electricity and heat production	Other energy industry own use **	Manufacturing industries and construction	Transport	of which: road	Other sectors	of which: residential
World ***	31 342.3	13 066.8	1 542.9	6 508.7	7 001.1	5 172.0	3 222.9	1 851.6
<i>Annex I Parties</i>	13 354.9	5 589.5	663.6	1 956.9	3 386.6	2 912.3	1 758.3	1 018.3
<i>Annex II Parties</i>	10 363.0	4 029.2	557.2	1 465.0	2 924.1	2 578.7	1 387.5	758.6
<i>North America</i>	5 817.0	2 319.8	323.9	699.3	1 804.1	1 544.9	670.0	354.8
<i>Europe</i>	2 932.8	975.8	156.0	465.1	800.8	751.2	535.0	336.8
<i>Asia Oceania</i>	1 613.1	733.5	77.3	300.6	319.2	282.5	182.5	67.0
<i>Annex I EIT</i>	2 703.7	1 447.1	96.5	438.0	416.2	293.5	305.9	216.1
<i>Non-Annex I Parties</i>	16 873.7	7 477.2	879.3	4 551.7	2 500.9	2 259.7	1 464.6	833.3
<i>Annex I Kyoto Parties</i>	7 713.5	3 234.2	384.8	1 290.5	1 691.2	1 457.0	1 112.8	657.6
Non-OECD Total	17 887.9	8 154.6	857.6	4 740.9	2 557.2	2 207.3	1 577.5	940.4
OECD Total	12 340.8	4 912.1	685.2	1 767.8	3 330.2	2 964.7	1 645.5	911.2
Canada	529.8	107.7	57.9	101.4	166.0	139.3	96.8	42.4
Chile	76.3	29.0	2.9	15.8	21.6	19.6	7.0	3.6
Mexico	432.3	133.1	57.6	57.5	152.0	147.6	32.0	18.7
United States	5 287.2	2 212.0	266.0	597.9	1 638.1	1 405.6	573.2	312.5
OECD Americas	6 325.6	2 481.9	384.4	772.6	1 977.8	1 712.1	708.9	377.1
Australia	396.8	207.8	33.9	49.9	86.0	71.9	19.1	8.2
Israel	67.2	43.3	2.0	1.5	11.1	11.1	9.3	2.7
Japan	1 186.0	519.5	41.7	244.8	219.7	198.5	160.4	58.2
Korea	587.7	299.7	39.0	102.3	85.6	81.5	61.2	33.5
New Zealand	30.3	6.3	1.7	5.9	13.5	12.0	3.0	0.5
OECD Asia Oceania	2 268.1	1 076.6	118.3	404.4	415.8	375.1	253.0	103.2
Austria	68.5	16.8	7.9	12.2	21.6	20.9	10.0	6.6
Belgium	108.6	19.6	4.7	33.4	26.4	25.6	24.6	14.8
Czech Republic	112.7	63.0	2.4	19.4	16.5	15.7	11.4	6.8
Denmark	41.7	17.9	2.3	4.0	12.3	11.3	5.1	2.7
Estonia	19.3	15.3	0.2	0.9	2.2	2.1	0.7	0.2
Finland	55.6	24.9	3.9	9.8	12.3	11.3	4.7	1.4
France	328.3	45.0	15.4	60.4	122.1	117.2	85.4	45.6
Germany	747.6	324.5	26.0	114.1	148.7	143.1	134.2	89.0
Greece	83.6	42.9	2.7	7.2	19.5	17.1	11.4	8.7
Hungary	47.4	15.2	1.7	6.0	11.3	11.1	13.1	7.9
Iceland	1.9	0.0	-	0.5	0.8	0.8	0.6	0.0
Ireland	34.9	11.8	0.2	3.7	10.5	10.3	8.7	6.1
Italy	393.0	134.2	17.8	54.8	108.2	102.0	78.0	50.9
Luxembourg	10.4	1.1	-	1.0	6.9	6.9	1.5	0.9
Netherlands	174.5	55.5	11.2	40.8	33.4	32.5	33.5	16.7
Norway	38.1	2.9	10.9	7.4	13.6	9.8	3.3	0.5
Poland	300.0	158.2	7.5	35.7	47.4	46.3	51.3	31.7
Portugal	48.1	17.1	2.6	7.0	17.1	16.2	4.3	2.2
Slovak Republic	33.9	8.6	4.7	8.0	7.1	5.9	5.4	3.0
Slovenia	15.3	6.2	0.0	1.7	5.5	5.5	1.8	1.0
Spain	270.3	84.1	17.0	45.3	91.3	80.4	32.6	18.5
Sweden	44.9	8.3	2.3	9.1	22.4	21.5	2.8	0.3
Switzerland	39.9	2.8	0.9	5.3	16.9	16.5	14.0	9.2
Turkey	285.7	111.4	9.9	53.9	45.7	39.6	64.9	43.5
United Kingdom	443.0	166.6	30.2	49.1	116.8	107.8	80.4	62.7
OECD Europe	3 747.1	1 353.6	182.5	590.8	936.5	877.4	683.6	430.8
<i>European Union - 27</i>	3 542.7	1 320.0	168.0	547.3	891.5	840.3	615.9	386.5

* This table shows CO₂ emissions for the same sectors which are present throughout this publication. In particular, the emissions from electricity and heat production are shown separately and not reallocated as in the table on pages II.28-II.30.

** Includes emissions from own use in petroleum refining, the manufacture of solid fuels, coal mining, oil and gas extraction and other energy-producing industries.

*** World includes international bunkers in the transport sector.

CO₂ emissions by sector in 2011million tonnes of CO₂

	Total CO ₂ emissions from fuel combustion	Electricity and heat production	Other energy industry own use	Manufacturing industries and construction	Transport	of which: road	Other sectors	of which: residential
Non-OECD Total	17 887.9	8 154.6	857.6	4 740.9	2 557.2	2 207.3	1 577.5	940.4
Albania	3.9	0.0	0.1	0.9	2.3	2.2	0.6	0.2
Armenia	4.7	0.9	-	0.6	1.3	1.3	1.8	1.0
Azerbaijan	26.8	9.6	2.1	2.1	5.8	5.3	7.2	5.9
Belarus	66.0	30.0	3.0	14.6	11.0	9.6	7.4	4.6
Bosnia and Herzegovina	22.8	15.7	0.4	1.7	3.4	3.4	1.6	0.6
Bulgaria	49.2	34.0	1.0	4.3	7.9	7.3	2.0	1.1
Croatia	18.8	4.4	2.0	3.3	5.8	5.4	3.3	1.9
Cyprus *	6.9	3.6	-	0.5	2.1	2.1	0.6	0.3
Georgia	6.3	1.0	0.2	1.4	2.3	2.2	1.4	1.0
Gibraltar	0.5	0.1	-	0.1	0.3	0.3	-	-
Kazakhstan	234.2	78.8	46.1	69.0	12.5	11.7	27.9	14.9
Kosovo	8.5	6.4	-	0.7	1.0	1.0	0.4	0.2
Kyrgyzstan	6.7	1.2	-	2.2	2.8	2.8	0.5	0.0
Latvia	7.6	2.2	-	1.0	3.1	2.8	1.3	0.5
Lithuania	13.2	2.9	1.7	3.0	4.2	3.9	1.3	0.7
FYR of Macedonia	9.1	5.8	0.1	1.5	1.4	1.4	0.3	0.1
Malta	2.5	1.9	-	0.0	0.5	0.5	0.1	0.1
Republic of Moldova	7.9	3.5	-	1.0	1.1	1.1	2.2	1.6
Montenegro	2.5	1.7	0.0	0.1	0.6	0.6	0.0	0.0
Romania	81.8	38.8	4.5	14.6	14.1	12.9	9.8	6.1
Russian Federation	1 653.2	939.1	61.0	251.1	247.5	140.9	154.4	114.6
Serbia	49.8	33.7	0.3	6.1	5.7	5.2	3.9	1.9
Tajikistan	3.0	0.4	-	-	0.3	0.3	2.3	-
Turkmenistan	61.5	17.5	5.3	4.6	7.2	3.7	27.0	-
Ukraine	285.4	129.2	6.7	74.2	32.6	24.1	42.7	35.9
Uzbekistan	110.2	36.8	3.7	19.4	7.9	4.4	42.4	32.4
Non-OECD Europe and Eurasia	2 742.8	1 399.4	138.1	478.1	384.8	256.4	342.6	225.7
Algeria	103.9	28.5	11.1	13.5	32.3	30.7	18.4	14.5
Angola	15.7	2.2	0.2	2.7	6.8	6.1	3.8	1.3
Benin	4.7	0.1	-	0.1	3.3	3.3	1.1	1.1
Botswana	4.7	0.7	-	1.3	2.1	2.1	0.6	0.1
Cameroon	5.1	1.2	0.4	0.4	2.8	2.6	0.4	0.4
Congo	2.1	0.3	-	0.1	1.6	1.5	0.1	0.1
Dem. Rep. of Congo	3.3	0.0	-	1.1	1.8	1.8	0.4	0.4
Côte d'Ivoire	5.9	2.7	0.1	0.5	1.5	1.3	1.1	0.3
Egypt	188.4	71.6	14.4	40.3	40.0	37.0	22.1	15.1
Eritrea	0.5	0.3	-	0.0	0.2	0.2	0.1	0.0
Ethiopia	5.9	0.0	-	1.5	2.9	2.9	1.4	0.8
Gabon	2.2	0.7	0.0	0.8	0.5	0.5	0.3	0.1
Ghana	10.8	2.4	0.3	1.6	5.5	5.0	1.1	0.7
Kenya	11.6	2.3	0.3	3.3	4.7	4.5	1.0	0.9
Libya	34.9	17.6	1.1	2.7	12.0	12.0	1.6	1.6
Morocco	50.2	18.1	1.4	8.0	14.3	14.3	8.4	3.5
Mozambique	2.8	0.0	0.0	0.6	1.9	1.8	0.3	0.1
Namibia	3.1	0.0	-	0.3	1.8	1.7	1.0	-
Nigeria	52.8	11.7	6.4	4.3	23.6	23.5	6.8	2.3
Senegal	5.7	2.1	0.0	1.0	2.1	2.0	0.5	0.3
South Africa	367.6	225.7	3.4	63.7	51.2	47.8	23.7	10.9
Sudan	14.5	1.8	0.6	2.5	7.6	7.6	2.0	0.6
United Rep. of Tanzania	6.3	1.5	-	0.9	3.2	3.2	0.6	0.6
Togo	1.2	0.0	-	0.1	1.0	1.0	0.2	0.2
Tunisia	21.1	7.3	0.1	4.7	5.7	5.7	3.3	1.7
Zambia	2.1	0.0	0.1	1.1	0.7	0.5	0.2	-
Zimbabwe	9.5	3.2	0.1	1.8	1.3	1.2	3.1	0.1
Other Africa	31.2	10.2	-	3.9	13.8	12.1	3.2	1.6
Africa	967.8	412.2	39.9	163.0	245.9	233.6	106.7	59.2

* Please refer to Part I, Chapter 4, Geographical Coverage.

CO₂ emissions by sector in 2011million tonnes of CO₂

	Total CO ₂ emissions from fuel combustion	Electricity and heat production	Other energy industry own use	Manufacturing industries and construction	Transport	of which: road	Other sectors	of which: residential
Bangladesh	54.1	24.8	0.2	12.1	8.4	6.7	8.6	6.4
Brunei Darussalam	8.9	2.7	2.5	2.4	1.3	1.3	0.1	0.1
Cambodia	4.0	0.8	-	0.6	2.0	1.7	0.6	0.6
Chinese Taipei	264.7	149.7	13.8	55.9	35.8	34.6	9.5	4.6
India	1 745.1	900.6	62.9	471.6	169.9	154.1	140.1	80.0
Indonesia	425.9	137.6	27.5	118.1	114.7	101.4	27.9	16.3
DPR of Korea	64.8	10.3	0.0	40.7	1.3	1.3	12.5	0.1
Malaysia	194.0	89.5	21.0	32.8	43.0	42.5	7.7	2.1
Mongolia	13.0	8.0	0.0	1.6	1.6	1.1	1.8	0.9
Myanmar	8.3	1.9	0.7	2.6	2.3	1.7	0.7	0.0
Nepal	4.1	0.0	-	1.1	1.9	1.9	1.0	0.4
Pakistan	136.3	39.0	1.2	42.2	36.1	33.5	17.7	14.5
Philippines	77.1	34.0	1.3	12.6	23.3	20.3	5.9	2.4
Singapore	64.8	23.0	6.2	27.0	8.1	8.1	0.4	0.2
Sri Lanka	15.0	5.5	0.1	1.2	7.2	7.0	1.1	0.4
Thailand	243.2	81.4	15.4	68.6	58.3	57.6	19.5	5.3
Vietnam	137.4	42.5	1.5	47.3	32.9	32.0	13.2	7.7
Other Asia	23.5	7.1	-	5.4	9.0	8.0	2.0	0.7
Asia	3 484.0	1 558.3	154.3	943.9	557.2	514.6	270.4	142.7
People's Rep. of China	7 954.5	3 981.0	285.1	2 487.5	623.3	494.2	577.7	319.5
Hong Kong, China	45.0	30.0	-	7.2	5.4	5.4	2.4	0.8
China	7 999.6	4 010.9	285.1	2 494.7	628.8	499.6	580.1	320.3
Argentina	183.6	50.6	16.8	35.9	46.9	43.3	33.5	21.8
Bolivia	15.2	3.1	1.3	1.7	5.9	5.6	3.2	1.2
Brazil	408.0	36.1	27.3	125.2	181.9	163.2	37.5	17.3
Colombia	66.7	6.7	7.2	20.6	23.8	22.8	8.4	4.0
Costa Rica	6.7	0.6	0.0	1.0	4.6	4.6	0.4	0.1
Cuba	28.0	16.9	0.3	7.5	1.4	1.2	1.9	0.6
Dominican Republic	18.0	9.6	0.0	1.0	4.9	4.0	2.4	2.2
Ecuador	30.9	7.0	1.0	3.8	16.0	13.5	3.1	2.8
El Salvador	6.0	1.4	0.0	1.0	3.1	3.1	0.5	0.5
Guatemala	10.4	2.3	-	1.9	5.5	5.5	0.7	0.7
Haiti	2.1	0.3	-	0.6	1.1	0.4	0.2	0.2
Honduras	7.6	2.6	-	1.2	3.1	3.1	0.7	0.1
Jamaica	7.6	3.2	0.1	0.3	2.1	1.4	1.9	0.3
Netherlands Antilles	5.1	0.9	1.6	0.9	1.6	1.6	0.2	0.2
Nicaragua	4.5	1.8	0.1	0.6	1.7	1.7	0.4	0.1
Panama	9.4	2.8	-	2.3	3.6	3.6	0.7	0.5
Paraguay	4.9	-	-	0.1	4.5	4.4	0.3	0.2
Peru	44.7	11.7	4.2	8.8	16.8	15.8	3.1	1.8
Trinidad and Tobago	40.8	4.5	8.9	24.1	2.8	2.8	0.4	0.4
Uruguay	7.6	2.0	0.5	0.8	3.2	3.1	1.1	0.4
Venezuela	159.2	28.6	24.5	56.4	43.0	43.0	6.7	5.0
Other Non-OECD Americas	19.6	11.0	-	0.7	5.9	4.9	2.0	0.8
Non-OECD Americas	1 086.8	203.8	93.9	296.2	383.3	352.6	109.5	61.3
Bahrain	22.7	8.3	4.4	6.8	2.9	2.9	0.2	0.2
Islamic Rep. of Iran	521.0	138.5	26.8	104.3	117.2	114.7	134.3	105.6
Iraq	108.3	49.0	4.3	9.5	34.2	34.2	11.2	11.2
Jordan	19.8	9.3	0.7	2.1	5.3	5.3	2.4	1.5
Kuwait	84.7	45.2	13.9	13.5	11.6	11.6	0.5	0.5
Lebanon	18.5	11.6	-	1.2	5.0	5.0	0.7	0.7
Oman	63.5	16.2	8.6	29.2	8.8	8.8	0.7	0.3
Qatar	71.4	15.0	29.4	12.2	14.5	14.5	0.3	0.3
Saudi Arabia	457.3	188.7	52.7	102.0	109.2	107.0	4.7	4.7
Syrian Arab Republic	53.2	24.7	1.4	8.2	11.9	11.7	6.9	4.0
United Arab Emirates	165.9	59.5	2.2	72.6	30.9	29.2	0.7	0.7
Yemen	20.7	3.9	2.1	3.4	5.8	5.8	5.6	1.6
Middle East	1 606.9	570.0	146.3	365.1	357.3	350.6	168.2	131.3

CO₂ emissions with electricity and heat allocated to consuming sectors * in 2011million tonnes of CO₂

	Total CO ₂ emissions from fuel combustion	Other energy industry own use **	Manufacturing industries and construction	Transport	of which: road	Other sectors	of which: residential
World ***	31 342.3	2 133.5	12 202.6	7 151.9	5 172.0	9 854.3	5 246.3
<i>Annex I Parties</i>	13 354.9	963.6	3 671.8	3 468.7	2 912.3	5 250.8	2 827.5
<i>Annex II Parties</i>	10 363.0	683.0	2 630.5	2 961.7	2 578.7	4 087.9	2 071.6
<i>North America</i>	5 817.0	391.4	1 274.1	1 809.1	1 544.9	2 342.4	1 175.7
<i>Europe</i>	2 932.8	195.6	826.0	819.6	751.2	1 091.6	611.8
<i>Asia Oceania</i>	1 613.1	96.0	530.4	332.9	282.5	653.9	284.1
<i>Annex I EIT</i>	2 703.7	269.5	931.1	460.5	293.5	1 042.7	687.2
<i>Non-Annex I Parties</i>	16 873.7	1 169.9	8 530.8	2 569.6	2 259.7	4 603.4	2 418.8
<i>Annex I Kyoto Parties</i>	7 713.5	619.0	2 405.4	1 768.2	1 457.0	2 920.9	1 640.8
Non-OECD Total	17 887.9	1 287.0	8 880.3	2 663.5	2 207.3	5 057.1	2 811.5
OECD Total	12 340.8	846.4	3 322.3	3 374.8	2 964.7	4 797.2	2 434.8
Canada	529.8	63.4	142.7	166.8	139.3	157.0	72.1
Chile	76.3	3.2	34.8	21.9	19.6	16.4	8.3
Mexico	432.3	61.7	128.4	152.7	147.6	89.5	48.7
United States	5 287.2	328.0	1 131.4	1 642.4	1 405.6	2 185.4	1 103.5
OECD Americas	6 325.6	456.3	1 437.3	1 983.7	1 712.1	2 448.3	1 232.7
Australia	396.8	44.7	126.2	89.7	71.9	136.1	66.1
Israel	67.2	2.5	12.0	11.1	11.1	41.7	16.7
Japan	1 186.0	49.4	396.0	229.7	198.5	510.9	215.4
Korea	587.7	45.4	256.1	86.9	81.5	199.4	79.9
New Zealand	30.3	1.8	8.2	13.5	12.0	6.9	2.6
OECD Asia Oceania	2 268.1	143.8	798.5	430.8	375.1	894.9	380.8
Austria	68.5	8.2	18.1	22.3	20.9	19.9	12.3
Belgium	108.6	5.8	42.5	26.7	25.6	33.6	18.9
Czech Republic	112.7	6.8	41.3	18.2	15.7	46.4	25.7
Denmark	41.7	2.7	6.9	12.4	11.3	19.7	11.0
Estonia	19.3	1.0	3.9	2.3	2.1	12.1	7.1
Finland	55.6	4.3	21.0	12.4	11.3	17.9	8.9
France	328.3	17.8	71.3	123.3	117.2	116.0	59.3
Germany	747.6	35.0	251.4	157.0	143.1	304.2	179.0
Greece	83.6	4.4	18.7	19.6	17.1	40.9	23.1
Hungary	47.4	2.6	10.1	11.6	11.1	23.1	13.4
Iceland	1.9	0.0	0.5	0.8	0.8	0.6	0.0
Ireland	34.9	0.3	8.2	10.6	10.3	15.9	10.0
Italy	393.0	30.5	110.9	112.1	102.0	139.5	78.4
Luxembourg	10.4	-	1.5	6.9	6.9	2.0	1.0
Netherlands	174.5	15.7	61.2	34.1	32.5	63.5	27.1
Norway	38.1	11.1	8.5	13.6	9.8	4.9	1.4
Poland	300.0	24.0	80.2	49.8	46.3	146.1	87.1
Portugal	48.1	3.4	13.4	17.3	16.2	14.0	6.5
Slovak Republic	33.9	5.1	11.1	7.2	5.9	10.5	5.3
Slovenia	15.3	0.1	4.4	5.6	5.5	5.1	2.8
Spain	270.3	18.7	70.0	92.4	80.4	89.2	44.0
Sweden	44.9	2.5	11.8	22.6	21.5	8.1	3.4
Switzerland	39.9	0.9	6.2	17.0	16.5	15.7	10.1
Turkey	285.7	11.2	109.4	46.1	39.6	119.1	68.2
United Kingdom	443.0	34.5	103.8	118.8	107.8	186.0	117.4
OECD Europe	3 747.1	246.3	1 086.5	960.3	877.4	1 454.0	821.4
<i>European Union - 27</i>	<i>3 542.7</i>	<i>235.8</i>	<i>1 013.1</i>	<i>915.9</i>	<i>840.3</i>	<i>1 377.9</i>	<i>780.7</i>

* CO₂ emissions from electricity and heat generation have been allocated to final consuming sectors in proportion to the electricity and heat consumed. The detailed unallocated emissions are shown in the table on pages II.25-II.27.

** Includes emissions from own use in petroleum refining, the manufacture of solid fuels, coal mining, oil and gas extraction and other energy-producing industries.

*** World includes international bunkers in the transport sector.

CO₂ emissions with electricity and heat allocated to consuming sectors in 2011million tonnes of CO₂

	Total CO ₂ emissions from fuel combustion	Other energy industry own use	Manufacturing industries and construction	Transport	of which: road	Other sectors	of which: residential
Non-OECD Total	17 887.9	1 287.0	8 880.3	2 663.5	2 207.3	5 057.1	2 811.5
Albania	3.9	0.1	0.9	2.3	2.2	0.6	0.2
Armenia	4.7	-	0.8	1.3	1.3	2.5	1.4
Azerbaijan	26.8	3.1	3.3	6.1	5.3	14.3	9.8
Belarus	66.0	5.4	24.8	11.5	9.6	24.4	14.4
Bosnia and Herzegovina	22.8	0.9	6.9	3.5	3.4	11.5	7.6
Bulgaria	49.2	3.0	15.8	8.2	7.3	22.3	13.1
Croatia	18.8	2.1	4.3	5.9	5.4	6.6	3.8
Cyprus *	6.9	0.0	0.9	2.1	2.1	3.8	1.6
Georgia	6.3	0.2	1.7	2.3	2.2	2.0	1.4
Gibraltar	0.5	-	0.1	0.3	0.3	0.1	-
Kazakhstan	234.2	53.0	105.2	14.4	11.7	61.6	32.4
Kosovo	8.5	0.0	2.5	1.0	1.0	5.0	3.7
Kyrgyzstan	6.7	0.0	2.5	2.8	2.8	1.4	0.3
Latvia	7.6	-	1.3	3.1	2.8	3.2	1.6
Lithuania	13.2	1.9	3.8	4.2	3.9	3.3	1.9
FYR of Macedonia	9.1	0.2	3.3	1.4	1.4	4.2	2.7
Malta	2.5	-	0.8	0.5	0.5	1.2	0.6
Republic of Moldova	7.9	0.1	2.2	1.1	1.1	4.5	3.1
Montenegro	2.5	0.0	1.2	0.6	0.6	0.7	0.6
Romania	81.8	7.9	28.6	14.9	12.9	30.4	20.2
Russian Federation	1 653.2	190.7	577.1	281.3	140.9	604.1	416.8
Serbia	49.8	1.0	16.3	6.2	5.2	26.3	18.8
Tajikistan	3.0	0.0	0.2	0.3	0.3	2.5	0.1
Turkmenistan	61.5	7.5	9.1	7.5	3.7	37.5	2.6
Ukraine	285.4	19.1	124.3	36.8	24.1	105.2	73.9
Uzbekistan	110.2	4.4	27.7	8.6	4.4	69.4	36.3
Non-OECD Europe and Eurasia	2 742.8	300.5	965.5	428.5	256.4	1 048.3	669.1
Algeria	103.9	11.7	23.7	32.9	30.7	35.5	24.5
Angola	15.7	0.2	3.5	6.8	6.1	5.3	2.7
Benin	4.7	-	0.2	3.3	3.3	1.2	1.2
Botswana	4.7	-	1.6	2.1	2.1	1.0	0.3
Cameroon	5.1	0.4	1.0	2.8	2.6	0.9	0.6
Congo	2.1	-	0.2	1.6	1.5	0.3	0.3
Dem. Rep. of Congo	3.3	-	1.2	1.8	1.8	0.4	0.4
Côte d'Ivoire	5.9	0.1	1.3	1.5	1.3	2.9	1.5
Egypt	188.4	14.4	62.8	40.0	37.0	71.2	45.4
Eritrea	0.5	-	0.1	0.2	0.2	0.3	0.2
Ethiopia	5.9	-	1.5	2.9	2.9	1.5	0.8
Gabon	2.2	0.0	0.9	0.5	0.5	0.7	0.5
Ghana	10.8	0.3	2.8	5.5	5.0	2.3	1.5
Kenya	11.6	0.3	4.6	4.7	4.5	2.0	1.5
Libya	34.9	1.1	6.5	12.0	12.0	15.3	5.9
Morocco	50.2	2.0	14.6	14.5	14.3	19.0	9.3
Mozambique	2.8	0.0	0.6	1.9	1.8	0.3	0.1
Namibia	3.1	-	0.3	1.8	1.7	1.0	-
Nigeria	52.8	6.4	6.3	23.6	23.5	16.6	9.0
Senegal	5.7	0.0	1.5	2.1	2.0	2.0	1.1
South Africa	367.6	15.4	183.8	54.9	47.8	113.5	53.3
Sudan	14.5	0.6	2.8	7.6	7.6	3.5	1.5
United Rep. of Tanzania	6.3	0.0	1.6	3.2	3.2	1.4	1.2
Togo	1.2	-	0.1	1.0	1.0	0.2	0.2
Tunisia	21.1	0.1	7.4	5.9	5.7	7.8	3.9
Zambia	2.1	0.1	1.1	0.7	0.5	0.2	0.0
Zimbabwe	9.5	0.1	3.2	1.3	1.2	4.9	1.1
Other Africa	31.2	0.2	6.3	13.8	12.1	10.9	5.3
Africa	967.8	53.4	341.7	250.6	233.6	322.1	173.1

* Please refer to Part I, Chapter 4, Geographical Coverage.

CO₂ emissions with electricity and heat allocated to consuming sectors in 2011

 million tonnes of CO₂

	Total CO ₂ emissions from fuel combustion	Other energy industry own use	Manufacturing industries and construction	Transport	of which: road	Other sectors	of which: residential
Bangladesh	54.1	0.2	26.2	8.4	6.7	19.3	14.4
Brunei Darussalam	8.9	2.7	2.6	1.3	1.3	2.3	1.0
Cambodia	4.0	-	0.8	2.0	1.7	1.2	1.0
Chinese Taipei	264.7	16.3	140.2	36.5	34.6	71.5	33.9
India	1 745.1	62.9	875.0	186.6	154.1	620.6	278.0
Indonesia	425.9	27.5	165.8	114.7	101.4	117.8	73.0
DPR of Korea	64.8	0.0	45.8	1.3	1.3	17.7	0.1
Malaysia	194.0	21.0	72.1	43.2	42.5	57.7	21.2
Mongolia	13.0	0.0	4.4	1.7	1.1	6.9	4.0
Myanmar	8.3	0.7	3.3	2.3	1.7	1.9	0.8
Nepal	4.1	-	1.1	1.9	1.9	1.0	0.4
Pakistan	136.3	1.2	53.3	36.1	33.5	45.6	32.6
Philippines	77.1	1.3	24.3	23.4	20.3	28.2	13.8
Singapore	64.8	6.2	36.3	9.4	8.1	12.9	3.8
Sri Lanka	15.0	0.1	3.1	7.2	7.0	4.7	2.6
Thailand	243.2	15.4	103.3	58.3	57.6	66.2	23.4
Vietnam	137.4	1.5	69.8	32.9	32.0	33.2	23.3
Other Asia	23.5	0.6	8.0	9.0	8.0	5.9	2.6
Asia	3 484.0	157.7	1 635.3	576.3	514.6	1 114.8	529.8
People's Rep. of China	7 954.5	517.4	5 065.2	660.9	494.2	1 711.1	933.3
Hong Kong, China	45.0	-	9.4	5.4	5.4	30.2	8.7
China	7 999.6	517.4	5 074.5	666.4	499.6	1 741.3	942.0
Argentina	183.6	16.8	57.9	47.2	43.3	61.8	37.6
Bolivia	15.2	1.3	2.6	5.9	5.6	5.5	2.4
Brazil	408.0	28.7	141.1	182.0	163.2	56.1	25.8
Colombia	66.7	7.2	22.6	23.8	22.8	13.0	6.8
Costa Rica	6.7	0.0	1.1	4.6	4.6	0.9	0.4
Cuba	28.0	0.3	12.1	1.7	1.2	13.9	8.9
Dominican Republic	18.0	0.0	5.5	4.9	4.0	7.6	6.3
Ecuador	30.9	1.0	6.0	16.0	13.5	7.9	5.2
El Salvador	6.0	0.0	1.6	3.1	3.1	1.3	0.9
Guatemala	10.4	-	2.8	5.5	5.5	2.1	1.5
Haiti	2.1	-	0.7	1.1	0.4	0.4	0.3
Honduras	7.6	-	1.9	3.1	3.1	2.7	1.2
Jamaica	7.6	0.1	1.5	2.1	1.4	3.9	1.1
Netherlands Antilles	5.1	1.6	1.4	1.6	1.6	0.6	0.2
Nicaragua	4.5	0.1	1.2	1.7	1.7	1.6	0.7
Panama	9.4	-	2.6	3.6	3.6	3.2	1.4
Paraguay	4.9	-	0.1	4.5	4.4	0.3	0.2
Peru	44.7	4.2	15.1	16.8	15.8	8.5	4.5
Trinidad and Tobago	40.8	8.9	26.8	2.8	2.8	2.2	1.7
Uruguay	7.6	0.5	1.4	3.2	3.1	2.6	1.3
Venezuela	159.2	25.2	68.9	43.1	43.0	22.0	13.1
Other Non-OECD Americas	19.6	-	6.3	5.9	4.9	7.4	4.6
Non-OECD Americas	1 086.8	96.0	381.2	384.2	352.6	225.4	125.9
Bahrain	22.7	4.4	8.0	2.9	2.9	7.3	4.2
Islamic Rep. of Iran	521.0	28.2	154.3	117.4	114.7	221.1	146.6
Iraq	108.3	4.3	19.6	34.2	34.2	50.2	34.2
Jordan	19.8	0.7	4.5	5.3	5.3	9.3	5.4
Kuwait	84.7	20.2	13.5	11.6	11.6	39.5	25.7
Lebanon	18.5	-	4.3	5.0	5.0	9.2	5.1
Oman	63.5	8.6	31.5	8.8	8.8	14.6	8.2
Qatar	71.4	29.4	17.1	14.5	14.5	10.4	5.0
Saudi Arabia	457.3	60.6	129.8	109.2	107.0	157.6	98.5
Syrian Arab Republic	53.2	1.4	16.6	11.9	11.7	23.3	15.3
United Arab Emirates	165.9	2.2	79.5	30.9	29.2	53.3	19.3
Yemen	20.7	2.1	3.5	5.8	5.8	9.3	4.1
Middle East	1 606.9	162.1	482.0	357.5	350.6	605.2	371.7

Total primary energy supply

petajoules

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World *	231 553	259 254	302 160	324 155	367 681	386 762	422 125	482 823	511 536	540 299	549 031	49.3%
<i>Annex I Parties</i>	..	..	..	..	233 718	229 470	241 486	250 691	235 796	245 328	241 338	3.3%
<i>Annex II Parties</i>	130 359	138 423	153 269	154 084	167 905	180 349	194 911	201 128	187 637	193 272	187 944	11.9%
<i>North America</i>	72 382	76 179	83 595	82 358	88 909	96 212	105 708	108 483	101 144	103 267	102 285	15.0%
<i>Europe</i>	44 325	46 578	51 959	53 014	56 453	58 860	62 235	65 394	60 880	63 214	60 433	7.1%
<i>Asia Oceania</i>	13 651	15 666	17 715	18 712	22 543	25 276	26 968	27 251	25 613	26 791	25 226	11.9%
<i>Annex I EIT</i>	..	..	..	..	63 575	46 515	43 350	45 993	44 038	47 618	48 649	-23.5%
<i>Non-Annex I Parties</i>	..	..	..	..	125 561	147 671	169 285	218 921	261 862	280 114	292 592	133.0%
<i>Annex I Kyoto Parties</i>	..	..	..	..	149 398	139 277	142 047	148 910	139 934	146 973	143 617	-3.9%
Intl. marine bunkers	4 533	4 371	4 583	3 928	4 780	5 549	6 403	7 331	7 795	8 464	8 482	77.5%
Intl. aviation bunkers	2 366	2 428	2 823	3 146	3 623	4 072	4 951	5 879	6 083	6 393	6 619	82.7%
Non-OECD Total **	83 463	100 993	124 450	144 448	169 929	173 095	189 178	238 849	278 913	299 093	311 829	83.5%
OECD Total ***	141 192	151 462	170 303	172 633	189 349	204 045	221 593	230 764	218 745	226 348	222 101	17.3%
Canada	5 918	6 948	8 037	8 080	8 732	9 662	10 528	11 397	10 523	10 509	10 544	20.8%
Chile	364	320	397	401	587	768	1 054	1 187	1 234	1 295	1 406	139.7%
Mexico	1 800	2 477	3 982	4 547	5 129	5 440	6 087	7 129	7 358	7 491	7 795	52.0%
United States	66 464	69 231	75 558	74 278	80 177	86 550	95 180	97 086	90 622	92 759	91 741	14.4%
OECD Americas	74 546	78 975	87 974	87 306	94 624	102 420	112 848	116 798	109 737	112 053	111 485	17.8%
Australia	2 161	2 528	2 914	3 049	3 610	3 875	4 526	4 752	5 112	5 129	5 145	42.5%
Israel	240	294	328	317	480	649	763	774	899	971	974	102.8%
Japan	11 201	12 772	14 424	15 194	18 394	20 777	21 728	21 794	19 769	20 896	19 321	5.0%
Korea	711	1 024	1 725	2 241	3 897	6 061	7 878	8 800	9 595	10 465	10 904	179.8%
New Zealand	289	366	376	469	539	623	714	705	731	766	761	41.2%
OECD Asia Oceania	14 602	16 984	19 768	21 270	26 920	31 986	35 610	36 825	36 107	38 228	37 104	37.8%
Austria	788	842	969	967	1 040	1 121	1 196	1 415	1 338	1 433	1 382	32.9%
Belgium	1 660	1 772	1 958	1 846	2 022	2 251	2 450	2 457	2 391	2 549	2 474	22.4%
Czech Republic	1 900	1 828	1 966	2 061	2 075	1 737	1 716	1 882	1 760	1 844	1 818	-12.4%
Denmark	775	732	801	808	727	812	780	791	769	808	754	3.7%
Estonia	..	..	..	..	415	219	197	216	199	233	235	-43.5%
Finland	761	825	1 030	1 082	1 188	1 211	1 350	1 435	1 392	1 525	1 455	22.4%
France	6 639	6 907	8 029	8 533	9 378	9 925	10 550	11 332	10 612	10 934	10 585	12.9%
Germany	12 772	13 126	14 954	14 956	14 702	14 089	14 092	14 034	13 115	13 807	13 053	-11.2%
Greece	364	492	627	735	898	949	1 134	1 266	1 232	1 156	1 119	24.6%
Hungary	797	959	1 187	1 246	1 204	1 083	1 047	1 155	1 041	1 075	1 045	-13.2%
Iceland	38	46	63	74	87	94	130	146	225	225	240	174.4%
Ireland	281	278	345	361	413	434	568	600	601	595	553	33.9%
Italy	4 413	4 889	5 478	5 414	6 136	6 662	7 181	7 698	6 902	7 128	7 009	14.2%
Luxembourg	170	158	149	128	142	132	140	183	166	177	175	23.1%
Netherlands	2 130	2 471	2 695	2 539	2 750	2 962	3 066	3 300	3 273	3 493	3 241	17.9%
Norway	557	611	767	836	879	981	1 092	1 121	1 247	1 354	1 178	34.0%
Poland	3 606	4 314	5 301	5 221	4 317	4 165	3 731	3 868	3 936	4 251	4 242	-1.7%
Portugal	263	322	418	459	701	846	1 033	1 108	1 011	986	966	37.9%
Slovak Republic	597	702	831	868	893	744	743	788	701	746	726	-18.7%
Slovenia	..	..	..	..	239	254	269	305	297	303	303	27.0%
Spain	1 784	2 407	2 834	2 969	3 772	4 220	5 102	5 942	5 348	5 349	5 257	39.4%
Sweden	1 509	1 634	1 695	1 977	1 976	2 107	1 991	2 159	1 901	2 148	2 053	3.9%
Switzerland	686	719	839	924	1 020	1 009	1 047	1 086	1 129	1 097	1 062	4.2%
Turkey	818	1 120	1 317	1 646	2 209	2 577	3 197	3 533	4 089	4 402	4 708	113.2%
United Kingdom	8 737	8 347	8 308	8 406	8 621	9 055	9 334	9 321	8 226	8 450	7 874	-8.7%
OECD Europe ***	52 044	55 502	62 561	64 057	67 805	69 640	73 134	77 141	72 902	76 068	73 511	8.4%
<i>European Union - 27</i>	..	..	..	..	68 485	68 551	70 545	74 398	69 095	71 834	69 250	1.1%

* Total world includes non-OECD total, OECD total as well as international marine bunkers and international aviation bunkers.

** Includes Estonia and Slovenia prior to 1990.

*** Excludes Estonia and Slovenia prior to 1990.

Total primary energy supply

petajoules

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	83 463	100 993	124 450	144 448	169 929	173 095	189 178	238 849	278 913	299 093	311 829	83.5%
Albania	72	83	129	114	112	56	74	91	87	86	91	-18.7%
Armenia	..	..	..	..	323	69	84	105	109	104	114	-64.8%
Azerbaijan	..	..	..	..	949	582	473	562	500	485	526	-44.6%
Belarus	..	..	..	..	1 905	1 036	1 034	1 125	1 119	1 159	1 235	-35.2%
Bosnia and Herzegovina	..	..	..	..	294	63	182	211	258	270	297	1.1%
Bulgaria	797	973	1 189	1 283	1 181	964	782	833	733	749	805	-31.9%
Croatia	..	..	..	..	378	295	326	373	365	359	353	-6.5%
Cyprus **	25	24	36	39	57	71	89	93	106	102	99	73.5%
Georgia	..	..	..	..	520	156	120	119	130	131	148	-71.5%
Gibraltar	1	1	2	2	2	4	5	6	7	7	7	195.3%
Kazakhstan	..	..	..	..	3 075	2 187	1 494	2 127	2 655	3 117	3 270	6.3%
Kosovo ***	..	..	..	..	..	..	65	81	102	104	106	..
Kyrgyzstan	..	..	..	..	313	100	97	105	104	117	130	-58.6%
Latvia	..	..	..	..	329	192	160	190	184	194	183	-44.3%
Lithuania	..	..	..	..	673	365	299	370	367	295	305	-54.6%
FYR of Macedonia	..	..	..	..	104	105	112	119	118	121	131	26.0%
Malta	9	9	13	14	29	30	28	37	33	36	36	23.3%
Republic of Moldova	..	..	..	..	414	198	121	147	133	143	139	-66.3%
Montenegro ***	..	..	..	..	..	..	..	41	42	49	49	..
Romania	1 764	2 169	2 731	2 719	2 606	1 951	1 517	1 620	1 460	1 467	1 500	-42.4%
Russian Federation	..	..	..	..	36 810	26 655	25 927	27 286	27 085	29 404	30 604	-16.9%
Serbia ***	..	..	..	..	825	577	575	672	635	650	678	-17.9%
Tajikistan	..	..	..	..	222	93	90	98	98	99	100	-54.9%
Turkmenistan	..	..	..	..	733	573	623	802	832	949	1 035	41.1%
Ukraine	..	..	..	..	10 550	6 854	5 602	5 982	4 791	5 539	5 294	-49.8%
Uzbekistan	..	..	..	..	1 941	1 786	2 125	1 966	1 877	1 832	1 999	3.0%
Former Soviet Union ****	32 169	39 351	46 453	52 248	..	..	..	..	..	..	..	..
Former Yugoslavia ****	918	1 068	1 411	1 722	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	35 753	43 678	51 963	58 141	64 347	44 961	42 004	45 163	43 929	47 570	49 234	-23.5%
Algeria	145	231	469	743	929	1 009	1 130	1 354	1 709	1 679	1 752	88.6%
Angola	161	173	191	209	246	268	314	392	527	560	568	130.8%
Benin	46	52	57	65	70	77	83	105	144	153	157	126.4%
Botswana	..	..	..	37	53	63	77	81	85	95	93	75.6%
Cameroon	113	127	153	187	209	230	264	292	289	291	281	34.9%
Congo	21	23	26	32	32	32	34	45	59	63	69	113.9%
Dem. Rep. of Congo	280	313	354	417	494	548	698	836	960	995	1 026	107.6%
Côte d'Ivoire	103	124	150	155	181	213	282	403	397	410	470	159.8%
Egypt	326	411	635	1 077	1 354	1 477	1 702	2 627	2 992	3 080	3 251	140.2%
Eritrea	..	..	..	..	..	42	30	32	30	31	32	..
Ethiopia	507	556	604	696	828	918	1 057	1 211	1 356	1 392	1 426	72.3%
Gabon	45	54	58	57	49	57	61	72	81	83	84	69.0%
Ghana	125	153	168	182	222	271	324	345	390	419	442	99.4%
Kenya	221	253	308	363	447	507	588	676	791	826	845	89.0%
Libya	66	153	288	418	468	586	666	740	849	905	559	19.5%
Morocco	102	143	204	234	291	360	429	558	630	678	724	149.0%
Mozambique	289	280	281	267	248	263	300	355	400	413	427	72.3%
Namibia	..	..	..	..	..	37	41	54	63	65	67	..
Nigeria	1 510	1 747	2 196	2 572	2 955	3 246	3 793	4 459	4 574	4 821	4 954	67.6%
Senegal	52	58	65	65	71	78	100	117	137	143	147	108.4%
South Africa	1 902	2 260	2 737	3 617	3 808	4 337	4 575	5 368	5 977	5 957	5 919	55.4%
Sudan	294	313	350	396	445	502	559	621	682	695	696	56.4%
United Rep. of Tanzania	317	321	336	367	407	461	561	718	810	839	869	113.2%
Togo	30	33	37	41	53	66	88	99	110	113	116	118.8%
Tunisia	69	91	137	174	207	243	306	348	385	405	398	92.1%
Zambia	147	163	188	206	226	244	261	302	328	337	354	56.7%
Zimbabwe	228	248	272	310	389	412	413	405	366	377	390	0.2%
Other Africa	1 102	1 201	1 373	1 535	1 751	1 968	2 283	2 655	3 041	3 116	3 206	83.2%
Africa	8 201	9 482	11 638	14 421	16 431	18 512	21 020	25 272	28 164	28 942	29 322	78.5%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

Total primary energy supply

petajoules

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	238	282	352	417	533	666	778	999	1 220	1 288	1 310	145.7%
Brunei Darussalam	7	31	57	75	72	94	100	93	127	136	160	121.9%
Cambodia	..	..	..	..	..	119	143	144	205	210	223	..
Chinese Taipei	419	599	1 170	1 392	2 020	2 670	3 573	4 278	4 283	4 575	4 546	125.0%
India	6 551	7 441	8 589	10 667	13 261	16 089	19 142	22 583	29 239	30 302	31 378	136.6%
Indonesia	1 468	1 722	2 333	2 756	4 129	5 477	6 480	7 514	8 364	8 847	8 751	111.9%
DPR of Korea	813	932	1 271	1 507	1 391	920	826	893	810	787	797	-42.7%
Malaysia	255	308	498	649	902	1 419	1 972	2 659	2 925	3 042	3 178	252.3%
Mongolia	..	..	..	131	143	113	100	110	136	145	151	5.8%
Myanmar	331	351	394	460	447	494	538	620	596	586	589	31.6%
Nepal	153	169	191	213	242	281	339	382	418	428	435	79.5%
Pakistan	713	852	1 037	1 351	1 794	2 242	2 682	3 191	3 483	3 530	3 552	98.0%
Philippines	641	764	938	995	1 198	1 404	1 669	1 623	1 595	1 696	1 694	41.4%
Singapore	114	155	215	283	482	788	783	919	1 183	1 435	1 400	190.5%
Sri Lanka	159	172	190	209	231	249	349	377	380	412	436	88.9%
Thailand	573	726	921	1 036	1 756	2 593	3 026	4 152	4 492	4 917	4 988	184.1%
Vietnam	554	582	603	668	748	916	1 203	1 736	2 238	2 467	2 563	242.6%
Other Asia	151	181	322	269	289	289	345	398	466	515	544	88.6%
Asia	13 140	15 267	19 081	23 078	29 640	36 822	44 049	52 671	62 163	65 316	66 696	125.0%
People's Rep. of China	16 393	20 257	25 051	28 959	36 453	43 729	48 624	74 344	95 716	105 371	114 205	213.3%
Hong Kong, China	126	152	194	275	362	446	561	530	625	579	624	72.0%
China	16 519	20 409	25 245	29 234	36 816	44 175	49 184	74 874	96 341	105 950	114 828	211.9%
Argentina	1 409	1 505	1 751	1 731	1 929	2 262	2 552	2 804	3 185	3 272	3 354	73.9%
Bolivia	43	62	102	106	109	156	156	217	260	307	323	195.1%
Brazil	2 921	3 815	4 767	5 416	5 870	6 745	7 848	9 016	10 068	11 132	11 306	92.6%
Colombia	580	646	741	837	1 014	1 156	1 081	1 134	1 290	1 350	1 324	30.5%
Costa Rica	34	42	53	53	70	98	120	162	191	195	195	177.5%
Cuba	450	503	627	654	741	463	538	450	517	473	468	-36.8%
Dominican Republic	98	129	144	145	171	223	314	286	291	301	309	81.0%
Ecuador	94	132	209	235	245	285	327	463	531	520	542	121.6%
El Salvador	73	95	105	110	103	141	166	189	176	176	181	74.9%
Guatemala	114	140	159	158	185	223	295	329	390	429	426	130.4%
Haiti	63	72	87	79	65	71	84	108	114	101	134	105.8%
Honduras	58	64	78	84	100	118	125	167	186	191	198	99.2%
Jamaica	84	112	95	72	117	134	160	156	127	118	128	10.1%
Netherlands Antilles	229	161	164	75	61	55	89	88	97	78	105	71.5%
Nicaragua	51	62	64	81	85	95	106	119	122	124	127	50.2%
Panama	69	71	59	65	62	84	108	121	141	155	170	172.2%
Paraguay	57	62	87	95	129	164	161	166	187	200	203	58.1%
Peru	382	434	471	443	408	459	512	571	720	804	862	111.4%
Trinidad and Tobago	110	97	160	213	251	257	454	707	849	895	876	249.4%
Uruguay	101	102	111	84	94	108	129	124	173	175	185	96.8%
Venezuela	819	1 047	1 483	1 653	1 824	2 161	2 362	2 787	2 914	3 161	2 939	61.2%
Other Non-OECD Americas	198	251	251	163	204	218	240	263	285	306	314	54.2%
Non-OECD Americas	8 038	9 603	11 771	12 550	13 835	15 675	17 929	20 425	22 814	24 464	24 669	78.3%
Bahrain	59	89	117	174	182	206	246	307	391	397	398	118.5%
Islamic Republic of Iran	695	1 115	1 594	2 252	2 903	4 238	5 149	7 220	8 936	8 821	8 882	206.0%
Iraq	173	255	404	578	825	1 446	1 086	1 125	1 375	1 584	1 684	104.1%
Jordan	21	32	64	110	137	180	204	280	312	297	296	115.8%
Kuwait	256	271	438	587	381	623	787	1 105	1 290	1 364	1 362	257.0%
Lebanon	77	91	104	98	82	185	205	210	279	267	266	225.0%
Oman	9	10	48	88	177	255	338	451	765	970	1 058	499.2%
Qatar	39	85	139	236	273	341	455	697	1 044	1 213	1 394	410.0%
Saudi Arabia	308	367	1 302	1 926	2 502	3 665	4 242	6 093	7 355	8 039	7 832	213.0%
Syrian Arab Republic	100	128	187	328	438	507	660	871	889	906	837	91.0%
United Arab Emirates	42	81	303	574	855	1 159	1 421	1 810	2 540	2 642	2 768	223.7%
Yemen	31	29	53	73	105	143	199	276	325	350	304	188.9%
Middle East	1 810	2 554	4 752	7 024	8 861	12 949	14 993	20 444	25 502	26 850	27 080	205.6%

Total primary energy supply

million tonnes of oil equivalent

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World *	5 530.6	6 192.2	7 217.0	7 742.3	8 781.9	9 237.6	10 082.3	11 532.0	12 217.8	12 904.8	13 113.4	49.3%
<i>Annex I Parties</i>	..	..	..	..	5 582.2	5 480.8	5 767.8	5 987.7	5 631.9	5 859.6	5 764.3	3.3%
<i>Annex II Parties</i>	3 113.6	3 306.2	3 660.8	3 680.2	4 010.3	4 307.6	4 655.4	4 803.9	4 481.6	4 616.2	4 489.0	11.9%
<i>North America</i>	1 728.8	1 819.5	1 996.6	1 967.1	2 123.6	2 298.0	2 524.8	2 591.1	2 415.8	2 466.5	2 443.0	15.0%
<i>Europe</i>	1 058.7	1 112.5	1 241.0	1 266.2	1 348.4	1 405.9	1 486.5	1 561.9	1 454.1	1 509.8	1 443.4	7.1%
<i>Asia Oceania</i>	326.1	374.2	423.1	446.9	538.4	603.7	644.1	650.9	611.8	639.9	602.5	11.9%
<i>Annex I EIT</i>	..	..	..	..	1 518.5	1 111.0	1 035.4	1 098.5	1 051.8	1 137.3	1 162.0	-23.5%
<i>Non-Annex I Parties</i>	..	..	..	..	2 999.0	3 527.1	4 043.3	5 228.8	6 254.5	6 690.4	6 988.4	133.0%
<i>Annex I Kyoto Parties</i>	..	..	..	..	3 568.3	3 326.6	3 392.7	3 556.7	3 342.3	3 510.4	3 430.2	-3.9%
Intl. marine bunkers	108.3	104.4	109.5	93.8	114.2	132.5	152.9	175.1	186.2	202.2	202.6	77.5%
Intl. aviation bunkers	56.5	58.0	67.4	75.1	86.5	97.3	118.3	140.4	145.3	152.7	158.1	82.7%
Non-OECD Total **	1 993.5	2 412.2	2 972.4	3 450.1	4 058.7	4 134.3	4 518.4	5 704.8	6 661.7	7 143.7	7 447.9	83.5%
OECD Total ***	3 372.3	3 617.6	4 067.6	4 123.3	4 522.5	4 873.5	5 292.7	5 511.7	5 224.6	5 406.2	5 304.8	17.3%
Canada	141.4	165.9	192.0	193.0	208.6	230.8	251.4	272.2	251.3	251.0	251.8	20.8%
Chile	8.7	7.6	9.5	9.6	14.0	18.3	25.2	28.4	29.5	30.9	33.6	139.7%
Mexico	43.0	59.2	95.1	108.6	122.5	129.9	145.4	170.3	175.8	178.9	186.2	52.0%
United States	1 587.5	1 653.5	1 804.7	1 774.1	1 915.0	2 067.2	2 273.3	2 318.9	2 164.5	2 215.5	2 191.2	14.4%
OECD Americas	1 780.5	1 886.3	2 101.2	2 085.3	2 260.1	2 446.2	2 695.3	2 789.7	2 621.0	2 676.3	2 662.8	17.8%
Australia	51.6	60.4	69.6	72.8	86.2	92.6	108.1	113.5	122.1	122.5	122.9	42.5%
Israel	5.7	7.0	7.8	7.6	11.5	15.5	18.2	18.5	21.5	23.2	23.3	102.8%
Japan	267.5	305.1	344.5	362.9	439.3	496.3	519.0	520.5	472.2	499.1	461.5	5.0%
Korea	17.0	24.5	41.2	53.5	93.1	144.8	188.2	210.2	229.2	250.0	260.4	179.8%
New Zealand	6.9	8.8	9.0	11.2	12.9	14.9	17.1	16.8	17.5	18.3	18.2	41.2%
OECD Asia Oceania	348.8	405.7	472.1	508.0	643.0	764.0	850.5	879.5	862.4	913.0	886.2	37.8%
Austria	18.8	20.1	23.2	23.1	24.8	26.8	28.6	33.8	32.0	34.2	33.0	32.9%
Belgium	39.7	42.3	46.8	44.1	48.3	53.8	58.5	58.7	57.1	60.9	59.1	22.4%
Czech Republic	45.4	43.7	46.9	49.2	49.6	41.5	41.0	44.9	42.0	44.0	43.4	-12.4%
Denmark	18.5	17.5	19.1	19.3	17.4	19.4	18.6	18.9	18.4	19.3	18.0	3.7%
Estonia	..	..	..	..	9.9	5.2	4.7	5.2	4.7	5.6	5.6	-43.5%
Finland	18.2	19.7	24.6	25.8	28.4	28.9	32.2	34.3	33.3	36.4	34.7	22.4%
France	158.6	165.0	191.8	203.8	224.0	237.1	252.0	270.7	253.5	261.2	252.8	12.9%
Germany	305.0	313.5	357.2	357.2	351.1	336.5	336.6	335.2	313.2	329.8	311.8	-11.2%
Greece	8.7	11.7	15.0	17.6	21.4	22.7	27.1	30.2	29.4	27.6	26.7	24.6%
Hungary	19.0	22.9	28.4	29.8	28.8	25.9	25.0	27.6	24.9	25.7	25.0	-13.2%
Iceland	0.9	1.1	1.5	1.8	2.1	2.3	3.1	3.5	5.4	5.4	5.7	174.4%
Ireland	6.7	6.6	8.2	8.6	9.9	10.4	13.6	14.3	14.4	14.2	13.2	33.9%
Italy	105.4	116.8	130.8	129.3	146.6	159.1	171.5	183.9	164.9	170.2	167.4	14.2%
Luxembourg	4.1	3.8	3.6	3.1	3.4	3.1	3.3	4.4	4.0	4.2	4.2	23.1%
Netherlands	50.9	59.0	64.4	60.6	65.7	70.7	73.2	78.8	78.2	83.4	77.4	17.9%
Norway	13.3	14.6	18.3	20.0	21.0	23.4	26.1	26.8	29.8	32.3	28.1	34.0%
Poland	86.1	103.0	126.6	124.7	103.1	99.5	89.1	92.4	94.0	101.5	101.3	-1.7%
Portugal	6.3	7.7	10.0	11.0	16.7	20.2	24.7	26.5	24.2	23.5	23.1	37.9%
Slovak Republic	14.3	16.8	19.8	20.7	21.3	17.8	17.7	18.8	16.7	17.8	17.3	-18.7%
Slovenia	..	..	..	..	5.7	6.1	6.4	7.3	7.1	7.2	7.2	26.9%
Spain	42.6	57.5	67.7	70.9	90.1	100.8	121.9	141.9	127.7	127.7	125.6	39.4%
Sweden	36.0	39.0	40.5	47.2	47.2	50.3	47.6	51.6	45.4	51.3	49.0	3.9%
Switzerland	16.4	17.2	20.0	22.1	24.4	24.1	25.0	25.9	27.0	26.2	25.4	4.2%
Turkey	19.5	26.8	31.4	39.3	52.8	61.5	76.3	84.4	97.7	105.1	112.5	113.2%
United Kingdom	208.7	199.4	198.4	200.8	205.9	216.3	222.6	222.6	196.5	201.8	188.1	-8.7%
OECD Europe ***	1 243.0	1 325.7	1 494.2	1 530.0	1 619.5	1 663.3	1 746.8	1 842.5	1 741.2	1 816.8	1 755.8	8.4%
<i>European Union - 27</i>	..	..	..	..	1 635.7	1 637.3	1 684.9	1 777.0	1 650.3	1 715.7	1 654.0	1.1%

* Total world includes non-OECD total, OECD total as well as international marine bunkers and international aviation bunkers.

** Includes Estonia and Slovenia prior to 1990.

*** Excludes Estonia and Slovenia prior to 1990.

Total primary energy supply

million tonnes of oil equivalent

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	1 993.5	2 412.2	2 972.4	3 450.1	4 058.7	4 134.3	4 518.4	5 704.8	6 661.7	7 143.7	7 447.9	83.5%
Albania	1.7	2.0	3.1	2.7	2.7	1.3	1.8	2.2	2.1	2.1	2.2	-18.7%
Armenia	..	..	..	..	7.7	1.6	2.0	2.5	2.6	2.5	2.7	-64.8%
Azerbaijan	..	..	..	..	22.7	13.9	11.3	13.4	11.9	11.6	12.6	-44.6%
Belarus	..	..	..	..	45.5	24.7	24.7	26.9	26.7	27.7	29.5	-35.2%
Bosnia and Herzegovina	..	..	..	..	7.0	1.5	4.3	5.0	6.2	6.5	7.1	1.1%
Bulgaria	19.0	23.2	28.4	30.6	28.2	23.0	18.7	19.9	17.5	17.9	19.2	-31.9%
Croatia	..	..	..	..	9.0	7.1	7.8	8.9	8.7	8.6	8.4	-6.5%
Cyprus **	0.6	0.6	0.9	0.9	1.4	1.7	2.1	2.2	2.5	2.4	2.4	73.5%
Georgia	..	..	..	..	12.4	3.7	2.9	2.8	3.1	3.1	3.5	-71.5%
Gibraltar	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	195.5%
Kazakhstan	..	..	..	..	73.4	52.2	35.7	50.8	63.4	74.4	78.1	6.3%
Kosovo ***	..	..	..	..	..	..	1.5	1.9	2.4	2.5	2.5	..
Kyrgyzstan	..	..	..	..	7.5	2.4	2.3	2.5	2.5	2.8	3.1	-58.6%
Latvia	..	..	..	..	7.9	4.6	3.8	4.5	4.4	4.6	4.4	-44.3%
Lithuania	..	..	..	..	16.1	8.7	7.1	8.8	8.8	7.1	7.3	-54.6%
FYR of Macedonia	..	..	..	..	2.5	2.5	2.7	2.8	2.8	2.9	3.1	26.0%
Malta	0.2	0.2	0.3	0.3	0.7	0.7	0.7	0.9	0.8	0.8	0.9	23.3%
Republic of Moldova	..	..	..	..	9.9	4.7	2.9	3.5	3.2	3.4	3.3	-66.3%
Montenegro ***	..	..	..	..	..	..	..	1.0	1.0	1.2	1.2	..
Romania	42.1	51.8	65.2	64.9	62.3	46.6	36.2	38.7	34.9	35.0	35.8	-42.4%
Russian Federation	..	..	..	..	879.2	636.6	619.3	651.7	646.9	702.3	731.0	-16.9%
Serbia ***	..	..	..	..	19.7	13.8	13.7	16.1	15.2	15.5	16.2	-17.9%
Tajikistan	..	..	..	..	5.3	2.2	2.1	2.3	2.3	2.4	2.4	-54.9%
Turkmenistan	..	..	..	..	17.5	13.7	14.9	19.2	19.9	22.7	24.7	41.1%
Ukraine	..	..	..	..	252.0	163.7	133.8	142.9	114.4	132.3	126.4	-49.8%
Uzbekistan	..	..	..	..	46.4	42.7	50.8	47.0	44.8	43.7	47.8	3.0%
Former Soviet Union ****	768.3	939.9	1 109.5	1 247.9	..	..	..	..	..	..	..	..
Former Yugoslavia ****	21.9	25.5	33.7	41.1	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	853.9	1 043.2	1 241.1	1 388.7	1 536.9	1 073.9	1 003.2	1 078.7	1 049.2	1 136.2	1 175.9	-23.5%
Algeria	3.5	5.5	11.2	17.7	22.2	24.1	27.0	32.3	40.8	40.1	41.9	88.6%
Angola	3.9	4.1	4.6	5.0	5.9	6.4	7.5	9.4	12.6	13.4	13.6	130.8%
Benin	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.5	3.4	3.7	3.8	126.4%
Botswana	..	..	..	0.9	1.3	1.5	1.8	1.9	2.0	2.3	2.2	75.6%
Cameroon	2.7	3.0	3.7	4.5	5.0	5.5	6.3	7.0	6.9	6.9	6.7	34.9%
Congo	0.5	0.6	0.6	0.8	0.8	0.8	0.8	1.1	1.4	1.5	1.7	113.9%
Dem. Rep. of Congo	6.7	7.5	8.5	10.0	11.8	13.1	16.7	20.0	22.9	23.8	24.5	107.6%
Côte d'Ivoire	2.5	3.0	3.6	3.7	4.3	5.1	6.7	9.6	9.5	9.8	11.2	159.8%
Egypt	7.8	9.8	15.2	25.7	32.3	35.3	40.7	62.7	71.5	73.6	77.6	140.2%
Eritrea	..	..	..	..	..	1.0	0.7	0.8	0.7	0.7	0.8	..
Ethiopia	12.1	13.3	14.4	16.6	19.8	21.9	25.2	28.9	32.4	33.3	34.1	72.3%
Gabon	1.1	1.3	1.4	1.4	1.2	1.4	1.5	1.7	1.9	2.0	2.0	69.0%
Ghana	3.0	3.7	4.0	4.4	5.3	6.5	7.7	8.2	9.3	10.0	10.5	99.4%
Kenya	5.3	6.0	7.4	8.7	10.7	12.1	14.1	16.2	18.9	19.7	20.2	89.0%
Libya	1.6	3.7	6.9	10.0	11.2	14.0	15.9	17.7	20.3	21.6	13.3	19.5%
Morocco	2.4	3.4	4.9	5.6	6.9	8.6	10.2	13.3	15.1	16.2	17.3	149.0%
Mozambique	6.9	6.7	6.7	6.4	5.9	6.3	7.2	8.5	9.6	9.9	10.2	72.3%
Namibia	..	..	..	..	..	0.9	1.0	1.3	1.5	1.6	1.6	..
Nigeria	36.1	41.7	52.5	61.4	70.6	77.5	90.6	106.5	109.3	115.1	118.3	67.6%
Senegal	1.2	1.4	1.6	1.6	1.7	1.9	2.4	2.8	3.3	3.4	3.5	108.4%
South Africa	45.4	54.0	65.4	86.4	91.0	103.6	109.3	128.2	142.8	142.3	141.4	55.4%
Sudan	7.0	7.5	8.4	9.5	10.6	12.0	13.3	14.8	16.3	16.6	16.6	56.4%
United Rep. of Tanzania	7.6	7.7	8.0	8.8	9.7	11.0	13.4	17.1	19.3	20.0	20.7	113.2%
Togo	0.7	0.8	0.9	1.0	1.3	1.6	2.1	2.4	2.6	2.7	2.8	118.8%
Tunisia	1.7	2.2	3.3	4.2	4.9	5.8	7.3	8.3	9.2	9.7	9.5	92.1%
Zambia	3.5	3.9	4.5	4.9	5.4	5.8	6.2	7.2	7.8	8.1	8.5	56.7%
Zimbabwe	5.4	5.9	6.5	7.4	9.3	9.8	9.9	9.7	8.7	9.0	9.3	0.2%
Other Africa	26.3	28.7	32.8	36.7	41.8	47.0	54.5	63.4	72.6	74.4	76.6	83.2%
Africa	195.9	226.5	278.0	344.4	392.5	442.2	502.1	603.6	672.7	691.3	700.3	78.5%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

Total primary energy supply

million tonnes of oil equivalent

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	5.7	6.7	8.4	9.9	12.7	15.9	18.6	23.9	29.1	30.8	31.3	145.7%
Brunei Darussalam	0.2	0.7	1.3	1.8	1.7	2.2	2.4	2.2	3.0	3.2	3.8	121.9%
Cambodia	..	..	..	..	..	2.8	3.4	3.4	4.9	5.0	5.3	..
Chinese Taipei	10.0	14.3	27.9	33.2	48.3	63.8	85.3	102.2	102.3	109.3	108.6	125.0%
India	156.5	177.7	205.2	254.8	316.7	384.3	457.2	539.4	698.4	723.7	749.4	136.6%
Indonesia	35.1	41.1	55.7	65.8	98.6	130.8	154.8	179.5	199.8	211.3	209.0	111.9%
DPR of Korea	19.4	22.3	30.4	36.0	33.2	22.0	19.7	21.3	19.4	18.8	19.0	-42.7%
Malaysia	6.1	7.3	11.9	15.5	21.5	33.9	47.1	63.5	69.9	72.6	75.9	252.3%
Mongolia	..	..	..	3.1	3.4	2.7	2.4	2.6	3.3	3.5	3.6	5.8%
Myanmar	7.9	8.4	9.4	11.0	10.7	11.8	12.8	14.8	14.2	14.0	14.1	31.6%
Nepal	3.7	4.0	4.6	5.1	5.8	6.7	8.1	9.1	10.0	10.2	10.4	79.5%
Pakistan	17.0	20.3	24.8	32.3	42.9	53.5	64.1	76.2	83.2	84.3	84.8	98.0%
Philippines	15.3	18.2	22.4	23.8	28.6	33.5	39.9	38.8	38.1	40.5	40.5	41.4%
Singapore	2.7	3.7	5.1	6.8	11.5	18.8	18.7	21.9	28.3	34.3	33.4	190.5%
Sri Lanka	3.8	4.1	4.5	5.0	5.5	5.9	8.3	9.0	9.1	9.8	10.4	88.9%
Thailand	13.7	17.3	22.0	24.7	41.9	61.9	72.3	99.2	107.3	117.4	119.1	184.1%
Vietnam	13.2	13.9	14.4	16.0	17.9	21.9	28.7	41.5	53.5	58.9	61.2	242.6%
Other Asia	3.6	4.3	7.7	6.4	6.9	6.9	8.2	9.5	11.1	12.3	13.0	88.6%
Asia	313.9	364.6	455.7	551.2	707.9	879.5	1 052.1	1 258.0	1 484.7	1 560.0	1 593.0	125.0%
People's Rep. of China	391.6	483.8	598.3	691.7	870.7	1 044.5	1 161.4	1 775.7	2 286.1	2 516.7	2 727.7	213.3%
Hong Kong, China	3.0	3.6	4.6	6.6	8.7	10.6	13.4	12.7	14.9	13.8	14.9	72.0%
China	394.6	487.5	603.0	698.2	879.3	1 055.1	1 174.7	1 788.3	2 301.1	2 530.6	2 742.6	211.9%
Argentina	33.7	35.9	41.8	41.3	46.1	54.0	61.0	67.0	76.1	78.2	80.1	73.9%
Bolivia	1.0	1.5	2.4	2.5	2.6	3.7	3.7	5.2	6.2	7.3	7.7	195.1%
Brazil	69.8	91.1	113.9	129.4	140.2	161.1	187.4	215.3	240.5	265.9	270.0	92.6%
Colombia	13.9	15.4	17.7	20.0	24.2	27.6	25.8	27.1	30.8	32.2	31.6	30.5%
Costa Rica	0.8	1.0	1.3	1.3	1.7	2.3	2.9	3.9	4.6	4.6	4.7	177.5%
Cuba	10.7	12.0	15.0	15.6	17.7	11.1	12.9	10.8	12.3	11.3	11.2	-36.8%
Dominican Republic	2.3	3.1	3.4	3.5	4.1	5.3	7.5	6.8	6.9	7.2	7.4	81.0%
Ecuador	2.2	3.1	5.0	5.6	5.8	6.8	7.8	11.0	12.7	12.4	12.9	121.6%
El Salvador	1.8	2.3	2.5	2.6	2.5	3.4	4.0	4.5	4.2	4.2	4.3	74.9%
Guatemala	2.7	3.3	3.8	3.8	4.4	5.3	7.0	7.9	9.3	10.3	10.2	130.4%
Haiti	1.5	1.7	2.1	1.9	1.6	1.7	2.0	2.6	2.7	2.4	3.2	105.8%
Honduras	1.4	1.5	1.9	2.0	2.4	2.8	3.0	4.0	4.5	4.6	4.7	99.2%
Jamaica	2.0	2.7	2.3	1.7	2.8	3.2	3.8	3.7	3.0	2.8	3.1	10.1%
Netherlands Antilles	5.5	3.8	3.9	1.8	1.5	1.3	2.1	2.1	2.3	1.9	2.5	71.5%
Nicaragua	1.2	1.5	1.5	1.9	2.0	2.3	2.5	2.8	2.9	3.0	3.0	50.2%
Panama	1.7	1.7	1.4	1.6	1.5	2.0	2.6	2.9	3.4	3.7	4.1	172.2%
Paraguay	1.4	1.5	2.1	2.3	3.1	3.9	3.9	4.0	4.5	4.8	4.9	58.1%
Peru	9.1	10.4	11.3	10.6	9.7	11.0	12.2	13.6	17.2	19.2	20.6	111.4%
Trinidad and Tobago	2.6	2.3	3.8	5.1	6.0	6.1	10.9	16.9	20.3	21.4	20.9	249.4%
Uruguay	2.4	2.4	2.6	2.0	2.3	2.6	3.1	3.0	4.1	4.2	4.4	96.8%
Venezuela	19.6	25.0	35.4	39.5	43.6	51.6	56.4	66.6	69.6	75.5	70.2	61.2%
Other Non-OECD Americas	4.7	6.0	6.0	3.9	4.9	5.2	5.7	6.3	6.8	7.3	7.5	54.2%
Non-OECD Americas	192.0	229.4	281.1	299.7	330.4	374.4	428.2	487.8	544.9	584.3	589.2	78.3%
Bahrain	1.4	2.1	2.8	4.2	4.4	4.9	5.9	7.3	9.3	9.5	9.5	118.5%
Islamic Republic of Iran	16.6	26.6	38.1	53.8	69.3	101.2	123.0	172.4	213.4	210.7	212.1	206.0%
Iraq	4.1	6.1	9.6	13.8	19.7	34.5	25.9	26.9	32.8	37.8	40.2	104.1%
Jordan	0.5	0.8	1.5	2.6	3.3	4.3	4.9	6.7	7.5	7.1	7.1	115.8%
Kuwait	6.1	6.5	10.5	14.0	9.1	14.9	18.8	26.4	30.8	32.6	32.5	257.0%
Lebanon	1.8	2.2	2.5	2.3	2.0	4.4	4.9	5.0	6.7	6.4	6.3	225.0%
Oman	0.2	0.2	1.1	2.1	4.2	6.1	8.1	10.8	18.3	23.2	25.3	499.2%
Qatar	0.9	2.0	3.3	5.6	6.5	8.1	10.9	16.6	24.9	29.0	33.3	410.0%
Saudi Arabia	7.4	8.8	31.1	46.0	59.8	87.5	101.3	145.5	175.7	192.0	187.1	213.0%
Syrian Arab Republic	2.4	3.1	4.5	7.8	10.5	12.1	15.8	20.8	21.2	21.6	20.0	91.0%
United Arab Emirates	1.0	1.9	7.2	13.7	20.4	27.7	33.9	43.2	60.7	63.1	66.1	223.7%
Yemen	0.7	0.7	1.3	1.7	2.5	3.4	4.7	6.6	7.8	8.4	7.3	188.9%
Middle East	43.2	61.0	113.5	167.8	211.6	309.3	358.1	488.3	609.1	641.3	646.8	205.6%

GDP using exchange rates

billion 2005 US dollars

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World	16 105.0	18 687.8	22 561.6	25 577.3	30 249.8	33 550.5	39 708.0	45 674.2	49 080.0	51 052.1	52 485.9	73.5%
<i>Annex I Parties</i>	..	..	..	..	24 965.9	26 926.6	31 427.1	35 006.6	35 653.1	36 625.7	37 229.7	49.1%
<i>Annex II Parties</i>	12 704.3	14 370.3	17 044.1	19 414.8	23 054.9	25 407.7	29 690.2	32 780.8	33 165.6	34 022.5	34 502.8	49.7%
<i>North America</i>	4 756.8	5 310.5	6 364.7	7 446.3	8 712.5	9 836.6	12 158.0	13 698.1	13 856.4	14 195.9	14 460.7	66.0%
<i>Europe</i>	5 981.7	6 737.3	7 840.1	8 495.5	9 970.4	10 827.0	12 490.1	13 638.0	13 900.2	14 190.0	14 401.5	44.4%
<i>Asia Oceania</i>	1 965.8	2 322.5	2 839.4	3 472.9	4 372.1	4 744.1	5 042.0	5 444.8	5 409.0	5 636.6	5 640.6	29.0%
<i>Annex I EIT</i>	..	..	..	..	1 637.8	1 198.6	1 344.6	1 736.8	1 963.4	2 031.4	2 105.5	28.6%
<i>Non-Annex I Parties</i>	..	..	..	..	5 283.9	6 624.0	8 280.9	10 667.6	13 426.9	14 426.4	15 256.1	188.7%
<i>Annex I Kyoto Parties</i>	..	..	..	..	16 706.5	17 570.9	19 855.7	21 923.1	22 399.1	23 019.0	23 337.1	39.7%
Non-OECD Total *	2 624.8	3 332.4	4 292.2	4 745.5	5 457.0	6 095.7	7 428.7	9 820.8	12 535.6	13 457.1	14 246.4	161.1%
OECD Total **	13 480.2	15 355.5	18 269.4	20 831.8	24 792.8	27 454.8	32 279.4	35 853.3	36 544.4	37 594.9	38 239.5	54.2%
Canada	397.7	473.6	568.3	650.7	749.9	816.7	999.9	1 133.8	1 166.4	1 203.9	1 234.8	64.7%
Chile	30.2	25.8	36.7	38.3	53.1	80.5	98.7	123.1	139.8	148.3	157.2	196.2%
Mexico	251.8	331.8	458.0	504.1	547.8	591.0	770.7	846.1	874.2	920.7	956.8	74.7%
United States	4 359.1	4 836.9	5 796.4	6 795.6	7 962.6	9 019.9	11 158.1	12 564.3	12 690.0	12 992.0	13 225.9	66.1%
OECD Americas	5 038.7	5 668.2	6 859.3	7 988.7	9 313.4	10 508.1	13 027.4	14 667.2	14 870.4	15 265.0	15 574.7	67.2%
Australia	259.5	288.2	334.1	387.9	451.1	530.7	640.1	759.8	849.2	869.8	899.1	99.3%
Israel	31.3	40.7	47.1	54.9	68.1	94.3	120.0	133.7	157.7	165.5	173.2	154.2%
Japan	1 656.4	1 975.5	2 448.1	3 018.2	3 851.3	4 132.2	4 308.1	4 571.9	4 441.8	4 648.5	4 622.0	20.0%
Korea	66.7	95.7	142.5	219.5	360.3	526.7	678.3	844.9	958.5	1 019.1	1 056.1	193.1%
New Zealand	49.8	58.8	57.1	66.9	69.8	81.2	93.8	113.1	118.0	118.3	119.5	71.3%
OECD Asia Oceania	2 063.8	2 459.0	3 028.9	3 747.4	4 800.5	5 365.1	5 840.3	6 423.3	6 525.2	6 821.2	6 869.9	43.1%
Austria	127.1	146.7	172.4	185.4	215.3	240.3	280.6	305.0	320.0	326.6	335.4	55.8%
Belgium	170.8	196.2	229.3	240.4	279.8	302.9	348.6	377.4	391.3	400.8	408.0	45.8%
Czech Republic	70.0	79.9	88.9	93.4	101.0	97.2	106.4	130.1	144.9	148.5	151.2	49.6%
Denmark	125.9	133.3	152.6	174.4	187.4	210.3	242.1	257.7	253.3	257.3	260.1	38.8%
Estonia	..	..	..	..	10.1	7.1	9.8	13.9	13.6	14.0	15.2	49.6%
Finland	73.3	88.8	103.7	118.8	140.2	136.0	171.9	195.8	197.5	204.1	209.7	49.6%
France	942.1	1 086.9	1 283.6	1 385.9	1 623.8	1 725.6	1 973.0	2 136.6	2 167.1	2 204.4	2 249.1	38.5%
Germany	1 365.1	1 492.0	1 760.6	1 884.1	2 216.3	2 448.7	2 685.2	2 766.3	2 840.9	2 959.1	3 048.7	37.6%
Greece	100.4	119.0	145.9	146.9	156.3	166.2	197.0	240.1	253.5	241.0	223.8	43.2%
Hungary	51.3	65.7	78.3	85.4	87.7	77.8	90.0	110.3	107.9	109.4	111.2	26.8%
Iceland	4.8	5.8	7.8	8.8	10.3	10.4	13.2	16.3	17.1	16.4	16.9	64.1%
Ireland	35.4	43.5	54.4	61.7	77.6	97.4	158.8	202.8	208.6	207.0	209.9	170.4%
Italy	802.3	920.5	1 144.3	1 244.0	1 450.7	1 547.7	1 701.0	1 786.3	1 734.0	1 763.9	1 770.5	22.0%
Luxembourg	9.5	10.7	11.9	13.5	19.3	23.5	31.6	37.6	40.1	41.3	41.9	117.0%
Netherlands	269.5	305.1	351.2	371.3	437.8	490.4	598.0	638.5	672.8	683.7	690.5	57.7%
Norway	98.8	118.5	147.8	174.2	189.6	227.6	272.7	304.1	314.3	315.8	319.6	68.6%
Poland	136.0	173.9	181.4	183.0	180.1	200.6	261.1	303.9	368.3	382.6	399.9	122.0%
Portugal	67.0	77.8	99.8	104.3	137.4	149.6	184.1	191.8	193.4	197.2	194.1	41.2%
Slovak Republic	23.8	27.1	30.2	32.6	34.9	31.9	37.7	47.9	57.6	60.2	62.1	77.8%
Slovenia	..	..	..	..	24.9	24.2	29.9	35.7	38.5	39.0	39.2	57.6%
Spain	401.2	496.6	547.3	586.6	730.9	787.6	963.1	1 130.8	1 182.7	1 178.9	1 183.8	62.0%
Sweden	176.6	198.7	212.4	232.6	263.9	273.0	324.5	370.6	376.9	401.6	416.5	57.8%
Switzerland	238.8	238.9	259.7	279.9	323.5	325.6	360.6	384.8	415.3	427.9	436.2	34.8%
Turkey	115.0	144.4	162.3	205.8	269.7	315.9	386.6	483.0	517.7	565.1	614.7	127.9%
United Kingdom	973.3	1 058.5	1 155.2	1 282.7	1 510.3	1 664.3	1 984.1	2 295.8	2 321.4	2 363.2	2 386.6	58.0%
OECD Europe **	6 377.7	7 228.3	8 381.1	9 095.7	10 678.9	11 581.6	13 411.6	14 762.8	15 148.8	15 508.7	15 794.9	47.9%
<i>European Union - 27</i>	..	..	..	..	10 052.0	10 843.0	12 524.5	13 767.5	14 098.5	14 399.6	14 626.4	45.5%

* Includes Estonia and Slovenia prior to 1990.

** Excludes Estonia and Slovenia prior to 1990.

GDP using exchange rates

billion 2005 US dollars

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	2 624.8	3 332.4	4 292.2	4 745.5	5 457.0	6 095.7	7 428.7	9 820.8	12 535.6	13 457.1	14 246.4	161.1%
Albania	3.0	3.8	5.0	5.5	5.6	4.9	6.4	8.4	10.4	10.7	11.0	96.6%
Armenia	..	..	..	..	4.1	2.1	2.8	4.9	5.8	5.9	6.2	52.2%
Azerbaijan	..	..	..	..	11.9	5.0	7.0	13.2	27.0	28.3	28.6	139.5%
Belarus	..	..	..	..	23.7	15.5	21.0	30.2	39.9	42.9	45.2	90.6%
Bosnia and Herzegovina	..	..	..	..	2.3	2.5	8.6	10.9	12.7	12.8	13.0	465.5%
Bulgaria	10.7	14.6	19.7	23.2	25.0	21.9	22.1	28.9	32.9	33.0	33.6	34.4%
Croatia	..	..	..	..	42.1	30.5	36.0	44.8	46.9	46.3	46.3	9.9%
Cyprus **	2.5	3.0	5.3	6.9	9.6	12.0	14.5	17.0	19.0	19.2	19.3	99.9%
Georgia	..	..	..	..	12.0	3.4	4.5	6.4	7.8	8.2	8.8	-26.6%
Gibraltar	0.5	0.5	0.5	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.1	50.2%
Kazakhstan	..	..	..	..	50.2	30.9	34.9	57.1	72.0	77.2	83.0	65.3%
Kosovo ***	..	..	..	..	..	..	2.6	3.7	4.6	4.8	5.1	..
Kyrgyzstan	..	..	..	..	3.1	1.6	2.0	2.5	3.1	3.1	3.2	5.3%
Latvia	..	..	..	..	14.4	8.2	10.8	16.0	15.6	15.5	16.4	13.6%
Lithuania	..	..	..	..	24.8	14.4	17.8	26.0	27.0	27.3	29.0	16.9%
FYR of Macedonia	..	..	..	..	6.1	4.8	5.5	6.0	6.9	7.1	7.3	19.9%
Malta	0.9	1.3	2.3	2.5	3.4	4.5	5.7	6.0	6.5	6.7	6.8	99.1%
Republic of Moldova	..	..	..	..	6.0	2.4	2.1	3.0	3.3	3.5	3.7	-37.5%
Montenegro ***	..	..	..	..	..	..	..	2.3	2.7	2.8	2.9	..
Romania	38.0	57.5	82.8	97.4	89.0	79.9	75.0	98.9	113.3	114.3	113.9	28.0%
Russian Federation	..	..	..	..	843.0	523.7	567.4	764.0	870.1	907.8	947.2	12.4%
Serbia ***	..	..	..	..	42.4	21.8	21.1	25.2	27.6	27.9	28.4	-33.0%
Tajikistan	..	..	..	..	3.8	1.4	1.4	2.3	3.0	3.2	3.4	-8.8%
Turkmenistan	..	..	..	..	8.0	5.1	6.3	8.1	12.2	13.3	15.2	89.4%
Ukraine	..	..	..	..	137.0	65.8	59.5	86.1	86.9	90.6	95.3	-30.5%
Uzbekistan	..	..	..	..	11.2	9.1	11.0	14.3	19.8	21.5	23.3	107.4%
Former Soviet Union ****	645.8	807.4	985.2	1 094.9	..	..	..	..	..	..	..	..
Former Yugoslavia ****	64.8	79.6	107.1	109.1	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	766.2	967.6	1 207.9	1 340.1	1 379.5	872.1	947.2	1 287.4	1 477.7	1 535.0	1 597.1	15.8%
Algeria	25.8	38.5	51.9	65.7	68.2	69.1	80.6	102.3	112.7	116.5	119.4	75.0%
Angola	13.6	13.8	13.8	15.1	17.7	14.0	19.1	30.6	52.8	54.6	56.8	220.8%
Benin	1.3	1.4	1.7	2.1	2.2	2.7	3.5	4.3	5.1	5.2	5.4	143.6%
Botswana	..	..	..	2.6	4.6	5.5	7.9	10.3	11.1	11.8	12.5	175.3%
Cameroon	4.8	6.4	8.7	13.6	12.1	11.0	13.8	16.6	18.5	19.1	19.9	64.5%
Congo	1.6	2.1	2.7	4.4	4.3	4.4	5.0	6.1	7.2	7.9	8.1	87.6%
Dem. Rep. of Congo	9.7	10.3	9.5	10.4	10.4	7.1	5.8	7.2	8.8	9.4	10.1	-2.9%
Côte d'Ivoire	7.9	9.9	12.1	12.3	13.0	14.0	16.4	16.4	17.8	18.2	17.4	33.1%
Egypt	15.9	18.2	29.1	40.3	49.5	58.5	75.4	89.7	115.1	121.0	123.2	148.8%
Eritrea	..	..	..	..	..	0.8	0.9	1.1	1.0	1.1	1.1	..
Ethiopia	5.4	5.5	5.7	5.3	6.9	7.2	9.0	12.3	18.3	20.1	21.6	214.9%
Gabon	3.0	6.1	5.6	6.4	6.7	7.8	8.0	8.7	9.3	10.0	10.4	54.7%
Ghana	4.5	4.2	4.5	4.4	5.5	6.8	8.4	10.7	13.7	14.8	16.9	207.4%
Kenya	4.9	6.4	8.7	9.9	13.0	14.1	15.7	18.7	22.2	23.5	24.5	88.5%
Libya	43.0	34.7	54.8	39.1	35.3	34.0	35.9	44.0	52.3	53.7	20.9	-40.8%
Morocco	16.1	19.4	25.3	29.8	37.0	38.7	46.7	59.5	72.9	75.5	79.0	113.7%
Mozambique	2.9	2.5	2.5	1.9	2.5	3.0	4.3	6.6	8.5	9.1	9.8	284.5%
Namibia	..	..	..	..	..	4.8	5.7	7.3	8.4	9.0	9.3	..
Nigeria	41.0	47.1	57.0	48.9	63.4	71.7	83.4	112.2	143.9	155.3	166.7	162.9%
Senegal	3.3	3.8	4.0	4.6	5.1	5.7	6.9	8.7	9.9	10.3	10.6	107.0%
South Africa	110.1	126.3	147.1	157.4	170.9	178.4	204.7	247.1	280.9	289.1	298.1	74.4%
Sudan	6.8	8.4	8.8	9.2	11.3	14.5	19.8	26.5	36.8	38.7	40.5	258.2%
United Rep. of Tanzania	3.9	4.7	5.4	5.6	7.5	8.1	10.1	14.1	18.4	19.7	21.0	181.6%
Togo	1.0	1.1	1.5	1.4	1.6	1.6	2.0	2.1	2.4	2.5	2.6	61.2%
Tunisia	6.3	8.5	11.6	14.2	16.4	19.9	26.0	32.3	39.1	40.2	39.5	140.4%
Zambia	4.2	4.7	4.8	4.9	5.3	4.9	5.7	7.2	9.1	9.8	10.4	96.5%
Zimbabwe	3.7	4.3	4.6	5.7	7.1	7.5	8.4	5.8	4.7	5.1	5.6	-21.1%
Other Africa	33.1	35.0	39.4	40.5	46.3	45.6	59.0	80.7	97.6	101.2	106.1	129.3%
Africa	373.8	423.3	520.9	555.6	623.9	661.7	788.2	989.0	1 198.7	1 252.5	1 267.5	103.1%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

GDP using exchange rates

billion 2005 US dollars

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	17.5	16.4	20.1	24.1	29.0	35.9	46.3	60.3	76.8	81.5	86.9	200.3%
Brunei Darussalam	4.2	5.1	8.3	6.9	6.9	8.1	8.6	9.5	9.6	9.9	10.1	46.0%
Cambodia	..	..	..	..	..	2.8	4.0	6.3	8.2	8.7	9.3	..
Chinese Taipei	30.6	46.5	80.1	109.3	167.0	236.8	305.8	364.9	402.8	446.4	470.6	181.7%
India	154.2	175.0	204.0	262.3	350.2	448.7	601.3	834.2	1 125.4	1 232.9	1 317.5	276.2%
Indonesia	40.6	55.2	80.9	106.4	150.1	219.2	226.9	285.9	355.8	377.8	402.2	168.0%
DPR of Korea	7.9	12.4	21.4	34.3	40.9	32.1	28.5	29.7	30.3	27.6	28.1	-31.2%
Malaysia	16.0	21.3	32.1	41.1	57.3	90.1	113.9	143.5	166.3	178.2	187.3	226.8%
Mongolia	..	..	..	1.5	1.8	1.6	1.8	2.5	3.2	3.5	4.1	119.6%
Myanmar	1.9	2.1	2.9	3.7	3.3	4.4	6.5	12.0	16.5	17.4	18.4	456.9%
Nepal	2.2	2.4	2.7	3.4	4.2	5.5	6.9	8.1	9.7	10.1	10.5	148.2%
Pakistan	20.2	23.5	31.7	44.0	58.4	73.2	85.9	109.6	129.4	134.0	138.0	136.4%
Philippines	31.2	39.1	52.5	49.3	62.1	69.1	82.4	103.1	121.8	131.1	136.3	119.4%
Singapore	11.0	15.4	23.3	32.4	49.1	73.9	97.8	123.5	147.3	169.0	177.3	261.3%
Sri Lanka	5.3	6.2	8.0	10.2	12.1	15.7	20.1	24.4	30.8	33.3	36.0	197.9%
Thailand	22.6	28.5	41.8	54.5	88.9	134.5	137.5	176.4	194.9	210.1	210.3	136.4%
Vietnam	9.5	9.6	10.2	14.1	17.8	26.3	36.8	52.9	69.6	74.3	78.6	343.0%
Other Asia	15.1	17.0	19.7	21.8	26.1	30.0	32.4	42.6	57.0	60.9	65.2	149.9%
Asia	389.9	475.8	639.6	819.2	1 125.2	1 507.9	1 843.5	2 389.3	2 955.4	3 206.6	3 386.5	201.0%
People's Rep. of China	126.6	157.7	216.3	360.0	525.7	937.4	1 417.0	2 256.9	3 476.5	3 838.0	4 194.9	698.0%
Hong Kong, China	22.2	29.7	52.3	69.1	100.2	129.7	147.6	181.6	206.1	220.1	230.9	130.4%
China	148.8	187.4	268.6	429.0	625.9	1 067.1	1 564.7	2 438.5	3 682.6	4 058.1	4 425.8	607.1%
Argentina	97.9	107.9	123.9	109.0	106.4	146.2	166.0	183.2	232.4	253.7	276.2	159.6%
Bolivia	4.0	5.1	5.6	5.1	5.7	6.9	8.2	9.5	11.5	12.0	12.6	121.9%
Brazil	253.7	371.7	513.4	541.8	598.5	696.1	769.0	882.2	1 019.9	1 096.8	1 126.7	88.3%
Colombia	41.1	51.1	66.3	74.1	94.3	115.5	122.7	146.5	175.9	182.9	193.8	105.4%
Costa Rica	4.7	5.9	7.7	7.7	9.8	12.8	16.3	20.0	23.8	25.0	26.0	164.9%
Cuba	18.3	22.0	25.8	38.9	38.5	26.7	33.4	42.6	52.8	55.0	57.3	48.8%
Dominican Republic	7.0	9.7	12.6	13.8	15.9	20.5	28.6	34.0	44.5	47.9	50.0	215.4%
Ecuador	10.4	14.8	19.2	20.5	23.5	26.8	28.1	36.9	42.5	44.0	47.4	102.1%
El Salvador	8.4	10.1	10.1	8.8	9.7	13.1	15.2	17.1	18.1	18.3	18.6	91.8%
Guatemala	8.7	10.9	14.4	13.6	15.7	19.3	23.4	27.2	31.6	32.6	33.8	116.0%
Haiti	3.2	3.4	4.5	4.3	4.3	3.8	4.3	4.2	4.6	4.3	4.5	5.8%
Honduras	2.7	3.1	4.4	4.8	5.6	6.7	7.7	9.7	11.2	11.5	11.9	113.2%
Jamaica	7.1	7.6	6.4	6.6	8.4	10.2	10.0	11.0	11.0	11.0	11.1	33.2%
Netherlands Antilles	1.1	1.2	1.4	1.5	1.7	1.9	2.3	2.5	2.6	2.7	2.7	58.0%
Nicaragua	4.4	5.5	4.4	4.6	3.9	4.2	5.4	6.3	7.0	7.2	7.6	95.9%
Panama	4.9	5.6	6.7	7.9	7.6	10.0	12.5	15.5	21.5	23.2	25.6	235.1%
Paraguay	1.9	2.5	4.3	4.7	5.6	6.8	6.7	7.5	8.5	9.7	10.4	83.7%
Peru	34.6	42.4	47.4	48.2	43.8	57.2	64.7	79.4	103.1	112.2	119.8	173.7%
Trinidad and Tobago	6.1	6.9	10.1	9.0	8.0	8.6	11.0	16.1	19.0	19.0	18.2	126.6%
Uruguay	9.2	9.9	12.3	10.2	12.3	14.9	17.2	17.4	21.1	23.0	24.3	97.6%
Venezuela	74.8	85.2	96.2	91.8	104.3	123.6	128.3	145.5	177.2	174.6	181.8	74.3%
Other Non-OECD Americas	12.6	13.1	17.6	18.4	24.1	25.6	31.0	34.5	35.8	36.6	37.5	55.8%
Non-OECD Americas	616.7	795.5	1 014.5	1 045.1	1 147.6	1 357.4	1 512.0	1 748.8	2 075.8	2 203.1	2 298.2	100.3%
Bahrain	1.7	3.1	5.0	4.7	5.8	8.1	10.0	13.5	17.0	17.8	18.1	210.5%
Islamic Republic of Iran	67.3	95.5	82.7	100.2	101.5	120.0	146.3	192.0	228.3	241.8	246.6	142.9%
Iraq	83.0	105.5	158.6	101.5	54.2	20.7	42.6	31.3	38.5	38.8	42.7	-21.2%
Jordan	2.3	2.2	4.6	5.9	5.6	7.9	9.2	12.6	16.7	17.0	17.5	212.0%
Kuwait	46.0	38.1	40.3	31.8	36.6	49.6	54.5	80.8	88.3	91.3	98.8	170.1%
Lebanon	14.3	14.1	11.9	16.7	9.5	16.9	18.2	21.9	28.0	30.0	30.9	224.9%
Oman	4.1	5.4	7.0	14.2	16.6	22.0	26.0	30.9	39.7	41.3	43.6	163.1%
Qatar	15.1	15.3	17.8	15.0	14.8	16.4	28.9	43.0	79.4	92.6	110.0	644.3%
Saudi Arabia	73.5	153.0	213.8	169.3	200.4	230.8	262.0	315.6	346.5	362.6	387.1	93.2%
Syrian Arab Republic	4.7	8.1	11.1	12.8	13.8	20.3	22.7	28.9	35.5	36.6	35.9	159.7%
United Arab Emirates	15.5	39.9	83.2	77.6	88.3	106.2	139.1	180.6	208.2	211.2	221.6	151.0%
Yemen	1.9	2.7	4.7	6.7	7.9	10.6	13.6	16.8	19.2	20.8	18.6	136.6%
Middle East	329.4	482.7	640.7	556.5	554.9	629.5	773.1	967.8	1 145.4	1 201.9	1 271.3	129.1%

GDP using purchasing power parities

billion 2005 US dollars

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World	18 844.7	22 235.7	27 109.4	30 712.6	36 173.4	40 210.4	48 150.8	57 343.2	64 565.9	67 779.1	70 313.0	94.4%
<i>Annex I Parties</i>	..	..	..	..	25 364.9	26 638.3	31 100.5	35 011.7	35 904.9	36 915.1	37 604.3	48.3%
<i>Annex II Parties</i>	11 822.4	13 374.3	15 871.6	18 076.6	21 453.2	23 673.0	27 753.9	30 682.4	31 056.6	31 845.4	32 298.0	50.6%
<i>North America</i>	4 756.2	5 309.8	6 363.8	7 445.3	8 711.3	9 835.3	12 156.5	13 696.3	13 854.6	14 194.0	14 458.8	66.0%
<i>Europe</i>	5 366.1	6 057.6	7 057.0	7 635.9	8 975.3	9 746.5	11 241.7	12 275.3	12 513.0	12 766.8	12 948.4	44.3%
<i>Asia Oceania</i>	1 700.1	2 006.9	2 450.8	2 995.5	3 766.5	4 091.2	4 355.7	4 710.9	4 689.0	4 884.6	4 890.8	29.9%
<i>Annex I EIT</i>	..	..	..	..	3 470.7	2 448.1	2 713.2	3 539.6	4 001.7	4 146.2	4 302.4	24.0%
<i>Non-Annex I Parties</i>	..	..	..	..	10 808.5	13 572.2	17 050.2	22 331.4	28 660.9	30 864.1	32 708.7	202.6%
<i>Annex I Kyoto Parties</i>	..	..	..	..	16 895.7	17 058.3	19 250.9	21 574.2	22 258.2	22 880.9	23 249.5	37.6%
Non-OECD Total *	5 801.0	7 317.7	9 332.5	10 451.8	12 077.9	13 458.4	16 508.7	22 049.8	28 441.1	30 576.5	32 407.3	168.3%
OECD Total **	13 043.7	14 918.1	17 776.9	20 260.8	24 095.6	26 752.0	31 642.0	35 293.4	36 124.8	37 202.6	37 905.7	57.3%
Canada	397.1	472.9	567.4	649.7	748.7	815.4	998.4	1 132.0	1 164.6	1 202.0	1 232.9	64.7%
Chile	50.6	43.3	61.5	64.3	89.0	135.1	165.5	206.4	234.5	248.8	263.7	196.2%
Mexico	385.0	507.4	700.3	770.9	837.7	903.7	1 178.6	1 293.8	1 336.8	1 407.9	1 463.1	74.7%
United States	4 359.1	4 836.9	5 796.4	6 795.6	7 962.6	9 019.9	11 158.1	12 564.3	12 690.0	12 992.0	13 225.9	66.1%
OECD Americas	5 191.8	5 860.5	7 125.6	8 280.5	9 638.0	10 874.0	13 500.5	15 196.5	15 425.9	15 850.8	16 185.6	67.9%
Australia	244.8	271.8	315.1	365.8	425.4	500.6	603.8	716.7	800.9	820.4	848.0	99.3%
Israel	37.8	49.2	56.8	66.3	82.2	113.8	144.9	161.4	190.4	199.9	209.1	154.2%
Japan	1 409.2	1 680.7	2 082.7	2 567.8	3 276.5	3 515.5	3 665.2	3 889.6	3 779.0	3 954.8	3 932.2	20.0%
Korea	86.6	124.3	184.9	284.9	467.7	683.8	880.5	1 096.7	1 244.3	1 322.9	1 371.0	193.1%
New Zealand	46.1	54.4	52.9	61.9	64.6	75.1	86.8	104.6	109.2	109.4	110.6	71.3%
OECD Asia Oceania	1 824.5	2 180.4	2 692.5	3 346.7	4 316.5	4 888.8	5 381.1	5 969.0	6 123.7	6 407.4	6 470.9	49.9%
Austria	115.3	133.1	156.4	168.2	195.3	218.0	254.6	276.7	290.3	296.3	304.3	55.8%
Belgium	152.7	175.4	205.0	214.9	250.1	270.7	311.6	337.3	349.8	358.3	364.7	45.8%
Czech Republic	117.2	133.7	148.8	156.3	169.1	162.6	178.1	217.7	242.5	248.5	253.0	49.6%
Denmark	87.9	93.0	106.5	121.8	130.8	146.8	169.0	179.9	176.8	179.6	181.6	38.8%
Estonia	..	..	..	..	16.2	11.4	15.8	22.3	21.7	22.4	24.3	49.6%
Finland	60.3	73.0	85.4	97.8	115.4	111.9	141.5	161.1	162.5	167.9	172.6	49.6%
France	820.5	946.5	1 117.9	1 207.0	1 414.2	1 502.8	1 718.3	1 860.7	1 887.3	1 919.8	1 958.7	38.5%
Germany	1 266.2	1 384.0	1 633.2	1 747.7	2 055.8	2 271.4	2 490.8	2 566.0	2 635.3	2 744.8	2 828.0	37.6%
Greece	113.1	134.0	164.3	165.5	176.0	187.2	221.8	270.4	285.5	271.4	252.1	43.2%
Hungary	79.6	102.0	121.5	132.6	136.1	120.8	139.6	171.2	167.5	169.7	172.5	26.8%
Iceland	3.0	3.7	5.0	5.6	6.5	6.6	8.4	10.4	10.9	10.4	10.7	64.1%
Ireland	28.2	34.7	43.3	49.1	61.8	77.5	126.4	161.4	166.0	164.7	167.1	170.4%
Italy	744.4	854.1	1 061.8	1 154.2	1 346.0	1 436.0	1 578.3	1 657.4	1 608.9	1 636.6	1 642.7	22.0%
Luxembourg	8.0	9.0	10.1	11.4	16.3	19.8	26.7	31.8	33.8	34.8	35.4	117.0%
Netherlands	241.8	273.7	315.1	333.2	392.9	440.0	536.5	572.9	603.7	613.5	619.6	57.7%
Norway	71.5	85.8	107.1	126.1	137.3	164.8	197.5	220.2	227.6	228.7	231.5	68.6%
Poland	235.4	301.1	314.0	316.7	311.8	347.2	452.0	526.1	637.6	662.3	692.2	122.0%
Portugal	78.7	91.5	117.3	122.6	161.5	175.7	216.3	225.4	227.3	231.7	228.1	41.2%
Slovak Republic	43.2	49.3	54.9	59.3	63.6	58.0	68.6	87.1	104.9	109.5	113.0	77.8%
Slovenia	..	..	..	..	32.7	31.8	39.3	47.0	50.7	51.3	51.6	57.6%
Spain	421.7	522.0	575.4	616.6	768.3	828.0	1 012.5	1 188.8	1 243.3	1 239.3	1 244.5	62.0%
Sweden	140.7	158.4	169.2	185.4	210.3	217.5	258.6	295.3	300.3	320.0	331.9	57.8%
Switzerland	170.6	170.7	185.6	200.0	231.1	232.7	257.6	274.9	296.7	305.7	311.6	34.8%
Turkey	186.0	233.6	262.5	332.9	436.2	510.9	625.3	781.2	837.4	914.1	994.3	127.9%
United Kingdom	841.4	915.1	998.7	1 108.9	1 305.7	1 438.9	1 715.3	1 984.9	2 007.0	2 043.1	2 063.3	58.0%
OECD Europe **	6 027.5	6 877.2	7 958.8	8 633.7	10 141.1	10 989.2	12 760.4	14 127.8	14 575.2	14 944.5	15 249.2	50.4%
<i>European Union - 27</i>	..	..	..	..	9 666.2	10 356.8	11 960.6	13 225.1	13 630.2	13 916.7	14 137.8	46.3%

* Includes Estonia and Slovenia prior to 1990.

** Excludes Estonia and Slovenia prior to 1990.

GDP using purchasing power parities

billion 2005 US dollars

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	5 801.0	7 317.7	9 332.5	10 451.8	12 077.9	13 458.4	16 508.7	22 049.8	28 441.1	30 576.5	32 407.3	168.3%
Albania	6.9	8.6	11.3	12.5	12.9	11.3	14.7	19.2	23.7	24.5	25.3	96.5%
Armenia	..	..	..	..	10.4	5.5	7.1	12.6	14.8	15.2	15.9	52.2%
Azerbaijan	..	..	..	..	34.0	14.2	20.0	37.7	76.9	80.7	81.5	139.5%
Belarus	..	..	..	..	65.6	42.8	58.1	83.5	110.2	118.7	125.0	90.6%
Bosnia and Herzegovina	..	..	..	..	5.0	5.5	18.8	24.0	27.8	28.1	28.5	465.5%
Bulgaria	28.1	38.3	51.6	60.9	65.6	57.5	58.1	75.9	86.3	86.7	88.2	34.4%
Croatia	..	..	..	..	64.0	46.3	54.8	68.1	71.3	70.3	70.3	9.9%
Cyprus **	2.8	3.3	5.7	7.5	10.5	13.1	15.8	18.5	20.6	20.9	21.0	99.9%
Georgia	..	..	..	..	29.5	8.3	11.1	15.7	19.1	20.2	21.7	-26.5%
Gibraltar	0.4	0.4	0.4	0.5	0.6	0.6	0.7	0.8	0.8	0.9	0.9	50.3%
Kazakhstan	..	..	..	..	115.9	71.2	80.5	131.8	166.1	178.2	191.5	65.3%
Kosovo ***	..	..	..	..	..	..	6.6	9.4	11.7	12.1	12.7	..
Kyrgyzstan	..	..	..	..	11.1	5.6	7.4	8.9	11.1	11.0	11.7	5.3%
Latvia	..	..	..	..	26.9	15.4	20.2	30.0	29.1	29.0	30.6	13.6%
Lithuania	..	..	..	..	46.2	26.8	33.3	48.5	50.4	51.1	54.1	16.9%
FYR of Macedonia	..	..	..	..	16.3	12.8	14.8	16.0	18.6	18.9	19.5	19.9%
Malta	1.3	1.9	3.3	3.6	4.8	6.3	8.1	8.5	9.2	9.4	9.6	99.1%
Republic of Moldova	..	..	..	..	16.9	6.8	6.0	8.5	9.3	10.0	10.6	-37.5%
Montenegro ***	..	..	..	..	..	..	..	5.2	6.3	6.4	6.6	..
Romania	77.7	117.7	169.6	199.5	182.2	163.6	153.5	202.5	231.9	234.1	233.3	28.0%
Russian Federation	..	..	..	..	1 872.3	1 163.0	1 260.1	1 696.7	1 932.3	2 016.1	2 103.5	12.4%
Serbia ***	..	..	..	..	106.5	54.9	52.9	63.4	69.3	70.0	71.4	-33.0%
Tajikistan	..	..	..	..	15.7	6.0	6.0	9.7	12.5	13.3	14.3	-8.8%
Turkmenistan	..	..	..	..	22.4	14.2	17.6	22.6	33.9	37.0	42.5	89.3%
Ukraine	..	..	..	..	418.4	200.8	181.8	263.0	265.4	276.5	290.9	-30.5%
Uzbekistan	..	..	..	..	41.1	33.3	40.2	52.4	72.5	78.6	85.2	107.4%
Former Soviet Union ****	1 521.5	1 902.2	2 321.1	2 579.6	..	..	..	..	..	..	..	..
Former Yugoslavia ****	114.0	140.0	188.3	191.8	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	1 752.6	2 212.3	2 751.4	3 055.9	3 194.8	1 985.9	2 148.3	2 933.0	3 381.1	3 518.0	3 666.1	14.8%
Algeria	59.3	88.6	119.6	151.3	157.1	159.2	185.7	235.8	259.7	268.3	275.0	75.0%
Angola	24.7	24.9	25.0	27.3	32.0	25.3	34.5	55.3	95.4	98.7	102.6	220.8%
Benin	3.1	3.4	4.1	5.1	5.3	6.6	8.5	10.3	12.2	12.6	13.0	143.7%
Botswana	..	..	..	5.5	9.6	11.7	16.8	21.6	23.4	25.0	26.4	175.3%
Cameroon	10.1	13.4	18.3	28.6	25.4	23.0	29.1	34.9	38.9	40.0	41.7	64.5%
Congo	3.1	4.2	5.3	8.6	8.5	8.7	9.8	11.9	14.2	15.4	15.9	87.6%
Dem. Rep. of Congo	21.4	22.7	21.0	23.1	23.0	15.8	12.9	15.9	19.5	20.9	22.3	-2.9%
Côte d'Ivoire	14.6	18.2	22.3	22.6	23.9	25.7	30.0	30.0	32.6	33.4	31.8	33.2%
Egypt	59.0	67.7	108.1	149.7	184.0	217.5	280.2	333.2	427.7	449.7	457.8	148.8%
Eritrea	..	..	..	..	..	2.0	2.1	2.7	2.5	2.6	2.8	..
Ethiopia	20.8	21.3	21.8	20.5	26.4	27.7	34.6	47.2	70.3	77.3	83.0	214.9%
Gabon	6.1	12.5	11.6	13.1	13.9	16.2	16.4	17.8	19.2	20.5	21.5	54.7%
Ghana	11.0	10.3	10.8	10.6	13.4	16.5	20.4	26.1	33.4	36.1	41.3	207.4%
Kenya	12.7	16.5	22.4	25.3	33.3	36.1	40.1	48.0	56.9	60.2	62.8	88.5%
Libya	79.0	63.8	100.7	71.8	65.0	62.6	66.0	80.9	96.2	98.6	38.4	-40.8%
Morocco	29.3	35.3	46.0	54.1	67.2	70.3	84.8	108.2	132.4	137.3	143.5	113.7%
Mozambique	6.2	5.2	5.3	4.1	5.4	6.4	9.1	13.9	18.0	19.2	20.6	284.5%
Namibia	..	..	..	..	..	7.2	8.5	10.8	12.6	13.4	13.9	..
Nigeria	89.4	102.6	124.3	106.5	138.2	156.3	181.7	244.6	313.5	338.5	363.4	162.9%
Senegal	7.0	7.9	8.3	9.5	10.7	11.9	14.5	18.2	20.8	21.6	22.2	107.0%
South Africa	180.9	207.5	241.6	258.5	280.7	293.0	336.2	405.8	461.4	474.8	489.6	74.4%
Sudan	15.4	19.0	20.0	20.7	25.6	32.8	44.8	60.0	83.3	87.5	91.7	258.2%
United Rep. of Tanzania	11.2	13.3	15.4	16.1	21.3	23.2	28.7	40.4	52.6	56.3	59.9	181.6%
Togo	2.1	2.5	3.2	3.1	3.5	3.6	4.4	4.6	5.2	5.4	5.7	61.2%
Tunisia	14.0	19.0	25.8	31.7	36.7	44.3	58.1	72.0	87.1	89.8	88.1	140.4%
Zambia	7.7	8.7	8.8	9.1	9.8	9.1	10.5	13.3	16.8	18.1	19.3	96.5%
Zimbabwe	2.5	2.9	3.1	3.8	4.8	5.1	5.7	3.9	3.2	3.5	3.8	-21.1%
Other Africa	75.6	80.7	91.6	95.3	110.0	111.3	140.7	190.2	233.7	245.4	256.4	133.0%
Africa	766.0	872.0	1 084.4	1 175.7	1 334.6	1 429.0	1 714.9	2 157.6	2 642.9	2 770.1	2 814.5	110.9%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

GDP using purchasing power parities

billion 2005 US dollars

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	47.6	44.5	54.6	65.5	78.6	97.5	125.7	163.7	208.6	221.3	236.1	200.3%
Brunei Darussalam	7.7	9.4	15.3	12.7	12.7	14.8	15.9	17.6	17.7	18.2	18.6	46.0%
Cambodia	..	..	..	..	..	9.1	12.9	20.1	26.3	27.8	29.8	..
Chinese Taipei	50.9	77.3	133.2	181.7	277.8	393.8	508.5	606.8	669.9	742.3	782.6	181.7%
India	465.2	527.9	615.6	791.7	1 057.1	1 354.4	1 814.9	2 517.9	3 396.9	3 721.4	3 976.5	276.2%
Indonesia	100.1	136.3	199.5	262.4	370.2	540.6	559.7	705.2	877.6	931.9	992.1	168.0%
DPR of Korea	28.7	45.0	77.6	124.2	148.0	116.2	103.2	107.5	109.6	99.8	101.8	-31.2%
Malaysia	34.9	46.5	70.0	89.8	125.2	196.8	248.7	313.5	363.3	389.3	409.1	226.8%
Mongolia	..	..	..	4.5	5.3	4.7	5.3	7.3	9.4	10.0	11.7	119.7%
Myanmar	7.8	8.7	11.9	15.0	13.5	17.8	26.7	49.0	67.6	71.1	75.0	457.1%
Nepal	6.9	7.6	8.6	10.9	13.6	17.5	22.1	26.0	31.0	32.4	33.7	148.2%
Pakistan	62.6	72.9	98.5	136.7	181.2	227.2	266.7	340.3	401.9	416.1	428.4	136.4%
Philippines	78.9	99.1	133.0	124.8	157.3	175.0	208.5	261.0	308.5	332.1	345.0	119.4%
Singapore	17.3	24.2	36.5	50.8	76.9	115.9	153.3	193.6	230.8	264.9	277.8	261.3%
Sri Lanka	15.1	17.7	22.9	29.2	34.5	44.9	57.4	69.7	88.0	95.0	102.9	197.9%
Thailand	57.0	71.8	105.4	137.5	224.5	339.5	347.2	445.2	491.9	530.4	530.8	136.4%
Vietnam	32.1	32.4	34.3	47.3	59.7	88.6	124.0	178.1	234.0	249.9	264.6	343.0%
Other Asia	26.6	30.5	35.3	37.2	40.5	52.1	56.4	80.0	108.6	120.8	132.7	227.6%
Asia	1 039.3	1 252.0	1 652.2	2 121.8	2 876.7	3 806.3	4 657.2	6 102.3	7 641.3	8 274.6	8 749.2	204.1%
People's Rep. of China	301.2	374.8	514.1	855.6	1 249.5	2 228.0	3 368.1	5 364.3	8 262.9	9 122.2	9 970.6	698.0%
Hong Kong, China	30.4	40.7	71.5	94.4	137.0	177.4	201.9	248.3	281.8	301.0	315.7	130.4%
China	331.6	415.5	585.6	950.0	1 386.5	2 405.3	3 570.0	5 612.5	8 544.7	9 423.2	10 286.3	641.9%
Argentina	223.8	246.8	283.4	249.3	243.5	334.4	379.7	419.0	531.7	580.4	631.9	159.6%
Bolivia	14.5	18.3	20.2	18.3	20.5	25.0	29.6	34.5	41.5	43.2	45.4	121.9%
Brazil	455.1	666.8	921.0	972.0	1 073.7	1 248.9	1 379.6	1 582.6	1 829.7	1 967.6	2 021.3	88.3%
Colombia	88.2	109.6	142.4	159.1	202.4	247.9	263.2	314.4	377.4	392.6	415.8	105.4%
Costa Rica	9.2	11.6	14.9	14.9	19.2	25.1	31.9	39.0	46.5	48.7	50.7	164.9%
Cuba	20.8	24.9	29.3	44.1	43.7	30.3	37.8	48.3	59.8	62.3	65.0	48.8%
Dominican Republic	12.2	16.9	21.8	24.0	27.6	35.6	49.7	59.1	77.3	83.3	87.0	215.4%
Ecuador	24.6	35.1	45.3	48.5	55.6	63.4	66.4	87.4	100.6	104.2	112.3	102.1%
El Salvador	16.9	20.4	20.4	17.7	19.6	26.4	30.7	34.5	36.5	37.0	37.6	91.8%
Guatemala	16.6	20.6	27.3	25.8	29.7	36.7	44.5	51.7	60.1	61.8	64.2	116.0%
Haiti	7.3	7.8	10.3	10.0	9.9	8.7	9.8	9.6	10.5	9.9	10.5	5.8%
Honduras	6.3	7.2	10.2	11.1	13.0	15.5	18.0	22.5	26.0	26.7	27.7	113.2%
Jamaica	12.1	12.9	10.9	11.1	14.2	17.2	16.9	18.6	18.7	18.6	18.9	33.2%
Netherlands Antilles	0.9	1.1	1.2	1.3	1.5	1.7	2.1	2.2	2.4	2.4	2.4	58.0%
Nicaragua	11.5	14.3	11.6	11.9	10.1	11.0	14.1	16.4	18.2	18.8	19.8	95.9%
Panama	9.4	10.7	12.8	15.2	14.7	19.2	24.0	29.7	41.3	44.4	49.2	235.1%
Paraguay	6.0	7.8	13.2	14.4	17.4	20.9	20.7	23.0	26.1	29.9	31.9	83.7%
Peru	76.7	93.9	105.2	106.9	97.1	126.8	143.4	176.0	228.7	248.8	265.7	173.7%
Trinidad and Tobago	10.0	11.3	16.5	14.7	13.2	14.1	18.0	26.4	31.1	31.1	29.8	126.6%
Uruguay	16.9	18.2	22.8	18.8	22.7	27.5	31.7	32.0	39.0	42.4	44.9	97.6%
Venezuela	135.6	154.5	174.3	166.4	189.1	224.0	232.5	263.8	321.2	316.4	329.6	74.3%
Other Non-OECD Americas	15.6	15.7	21.1	22.3	28.3	30.3	36.6	40.9	42.6	43.6	41.3	45.7%
Non-OECD Americas	1 190.1	1 526.4	1 936.1	1 977.8	2 166.4	2 590.5	2 881.1	3 331.7	3 966.9	4 214.0	4 402.8	103.2%
Bahrain	2.5	4.6	7.6	7.0	8.8	12.3	15.1	20.3	25.8	26.9	27.4	210.5%
Islamic Republic of Iran	225.4	320.0	277.3	335.9	340.2	402.1	490.2	643.5	765.2	810.3	826.3	142.9%
Iraq	218.6	277.9	418.0	267.5	142.7	54.6	112.2	82.5	101.5	102.3	112.5	-21.2%
Jordan	4.2	4.1	8.6	11.1	10.4	14.7	17.2	23.5	31.0	31.7	32.6	212.0%
Kuwait	62.9	52.0	55.1	43.5	50.0	67.8	74.4	110.4	120.7	124.9	135.1	170.1%
Lebanon	25.5	25.0	21.2	29.7	16.9	30.1	32.3	38.9	49.9	53.3	54.9	224.9%
Oman	6.8	8.9	11.6	23.5	27.4	36.4	43.0	51.1	65.7	68.3	72.1	163.1%
Qatar	20.0	20.3	23.6	19.9	19.6	21.7	38.3	57.1	105.3	122.8	145.8	644.3%
Saudi Arabia	114.3	237.8	332.3	263.2	311.6	358.8	407.3	490.6	538.6	563.6	601.8	93.2%
Syrian Arab Republic	12.6	21.3	29.5	34.0	36.6	53.6	60.0	76.4	93.9	96.9	95.0	159.7%
United Arab Emirates	23.3	60.0	125.3	116.8	132.9	160.0	209.5	272.1	313.7	318.1	333.7	151.0%
Yemen	5.2	7.3	12.8	18.4	21.7	29.2	37.6	46.2	53.0	57.2	51.2	136.6%
Middle East	721.4	1 039.5	1 322.8	1 170.5	1 118.8	1 241.3	1 537.4	1 912.6	2 264.2	2 376.6	2 488.5	122.4%

Population

millions

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World	3 764.9	4 066.6	4 443.4	4 851.5	5 288.9	5 706.6	6 108.3	6 491.3	6 801.6	6 880.1	6 958.0	31.6%
<i>Annex I Parties</i>	..	..	..	..	1 175.8	1 207.3	1 231.6	1 257.5	1 281.9	1 287.8	1 292.7	9.9%
<i>Annex II Parties</i>	705.3	729.4	755.0	775.9	799.3	827.7	853.1	881.8	905.5	910.3	914.7	14.4%
<i>North America</i>	229.7	239.1	252.2	264.3	277.9	295.9	313.1	328.2	341.0	343.9	346.5	24.7%
<i>Europe</i>	354.6	361.4	367.7	371.3	377.3	384.4	389.9	401.1	410.0	411.5	413.2	9.5%
<i>Asia Oceania</i>	121.0	128.8	135.0	140.2	144.2	147.5	150.1	152.4	154.5	154.9	155.0	7.5%
<i>Annex I EIT</i>	..	..	..	..	321.1	319.5	313.9	306.8	304.0	304.1	303.6	-5.4%
<i>Non-Annex I Parties</i>	..	..	..	..	4 113.1	4 499.3	4 876.6	5 233.8	5 519.7	5 592.3	5 665.3	37.7%
<i>Annex I Kyoto Parties</i>	..	..	..	..	860.0	870.4	874.6	882.8	892.7	895.1	896.8	4.3%
Non-OECD Total *	2 870.2	3 131.9	3 463.5	3 831.3	4 224.9	4 595.2	4 956.4	5 298.6	5 575.6	5 646.5	5 717.5	35.3%
OECD Total **	894.7	934.8	980.0	1 020.2	1 064.0	1 111.4	1 151.8	1 192.7	1 226.0	1 233.6	1 240.5	16.6%
Canada	22.0	23.1	24.5	25.8	27.7	29.3	30.7	32.2	33.7	34.1	34.5	24.5%
Chile	9.8	10.4	11.2	12.1	13.2	14.4	15.4	16.3	16.9	17.1	17.3	31.0%
Mexico	49.9	56.7	65.7	73.5	81.3	91.2	98.3	103.8	107.4	108.3	109.2	34.4%
United States	207.7	216.0	227.7	238.5	250.2	266.6	282.4	296.0	307.2	309.8	312.0	24.7%
OECD Americas	289.3	306.3	329.1	350.0	372.3	401.5	426.8	448.3	465.3	469.3	473.0	27.1%
Australia	13.2	14.0	14.8	15.9	17.2	18.2	19.3	20.5	22.1	22.4	22.8	32.6%
Israel	3.1	3.5	3.9	4.3	4.7	5.5	6.3	7.0	7.5	7.6	7.8	66.0%
Japan	105.0	111.8	117.1	121.0	123.6	125.6	126.9	127.8	128.0	128.0	127.8	3.4%
Korea	32.9	35.3	38.1	40.8	42.9	45.1	47.0	48.1	49.2	49.4	49.8	16.1%
New Zealand	2.9	3.1	3.1	3.3	3.4	3.7	3.9	4.1	4.3	4.4	4.4	30.9%
OECD Asia Oceania	157.0	167.6	177.0	185.3	191.7	198.1	203.4	207.5	211.2	211.9	212.6	10.9%
Austria	7.5	7.6	7.5	7.6	7.7	7.9	8.0	8.2	8.4	8.4	8.4	9.7%
Belgium	9.7	9.8	9.9	9.9	10.0	10.1	10.2	10.5	10.8	10.9	11.0	10.1%
Czech Republic	9.8	10.1	10.3	10.3	10.4	10.3	10.3	10.2	10.5	10.5	10.5	1.3%
Denmark	5.0	5.1	5.1	5.1	5.1	5.2	5.3	5.4	5.5	5.5	5.6	8.3%
Estonia	..	..	..	..	1.6	1.4	1.4	1.3	1.3	1.3	1.3	-15.6%
Finland	4.6	4.7	4.8	4.9	5.0	5.1	5.2	5.2	5.3	5.4	5.4	8.0%
France	52.4	53.9	55.1	56.6	58.1	59.4	60.7	63.0	64.5	64.8	65.1	12.0%
Germany	78.3	78.7	78.3	77.7	79.4	81.7	82.2	82.5	81.9	81.8	81.8	3.0%
Greece	9.0	9.2	9.8	10.1	10.3	10.6	10.9	11.1	11.3	11.3	11.3	9.4%
Hungary	10.4	10.5	10.7	10.6	10.4	10.3	10.2	10.1	10.0	10.0	10.0	-3.8%
Iceland	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	25.1%
Ireland	3.0	3.2	3.4	3.5	3.5	3.6	3.8	4.2	4.5	4.6	4.6	30.5%
Italy	54.1	55.4	56.4	56.6	56.7	56.8	56.9	58.6	60.2	60.5	60.7	7.1%
Luxembourg	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	35.9%
Netherlands	13.2	13.7	14.1	14.5	14.9	15.5	15.9	16.3	16.5	16.6	16.7	11.7%
Norway	3.9	4.0	4.1	4.2	4.2	4.4	4.5	4.6	4.8	4.9	5.0	16.8%
Poland	32.8	34.0	35.6	37.2	38.0	38.3	38.3	38.2	38.2	38.5	38.5	1.3%
Portugal	8.7	9.2	9.9	10.1	10.0	10.0	10.2	10.5	10.6	10.6	10.7	6.6%
Slovak Republic	4.6	4.8	5.0	5.2	5.3	5.4	5.4	5.4	5.4	5.4	5.4	2.7%
Slovenia	..	..	..	..	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.8%
Spain	34.3	35.7	37.7	38.6	39.0	39.4	40.3	43.4	45.9	46.1	46.1	18.2%
Sweden	8.1	8.2	8.3	8.4	8.6	8.8	8.9	9.0	9.3	9.4	9.5	10.4%
Switzerland	6.3	6.4	6.4	6.5	6.8	7.1	7.2	7.5	7.8	7.8	7.9	15.8%
Turkey	36.2	40.1	44.4	50.3	55.1	59.8	64.3	68.6	72.1	73.0	74.0	34.2%
United Kingdom	55.9	56.2	56.3	56.6	57.2	58.0	58.9	60.2	61.8	62.3	62.7	9.6%
OECD Europe **	448.4	460.9	473.8	484.9	500.0	511.9	521.7	536.9	549.5	552.4	555.0	11.0%
<i>European Union - 27</i>	..	..	..	..	472.8	478.6	483.0	492.1	500.4	502.1	503.4	6.5%

* Includes Estonia and Slovenia prior to 1990.

** Excludes Estonia and Slovenia prior to 1990.

Population

millions

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	2 870.2	3 131.9	3 463.5	3 831.3	4 224.9	4 595.2	4 956.4	5 298.6	5 575.6	5 646.5	5 717.5	35.3%
Albania	2.2	2.4	2.7	3.0	3.3	3.1	3.1	3.1	3.2	3.2	3.2	-2.2%
Armenia	..	..	..	..	3.5	3.2	3.1	3.1	3.1	3.1	3.1	-12.6%
Azerbaijan	..	..	..	..	7.2	7.7	8.0	8.4	8.9	9.1	9.2	28.1%
Belarus	..	..	..	..	10.2	10.2	10.0	9.8	9.5	9.5	9.5	-7.0%
Bosnia and Herzegovina	..	..	..	..	4.3	3.3	3.7	3.8	3.8	3.8	3.8	-12.9%
Bulgaria	8.5	8.7	8.9	9.0	8.7	8.4	8.2	7.7	7.6	7.5	7.5	-14.2%
Croatia	..	..	..	..	4.8	4.7	4.4	4.4	4.4	4.4	4.4	-7.8%
Cyprus **	0.6	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.8	0.8	0.8	38.4%
Georgia	..	..	..	..	4.8	4.7	4.4	4.4	4.4	4.5	4.5	-6.6%
Gibraltar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.7%
Kazakhstan	..	..	..	..	16.3	15.8	14.9	15.1	16.1	16.3	16.6	1.3%
Kosovo ***	..	..	..	..	..	..	1.7	1.7	1.8	1.8	1.8	..
Kyrgyzstan	..	..	..	..	4.4	4.6	4.9	5.2	5.4	5.4	5.5	25.4%
Latvia	..	..	..	..	2.7	2.5	2.4	2.3	2.3	2.2	2.2	-16.6%
Lithuania	..	..	..	..	3.7	3.6	3.5	3.4	3.3	3.3	3.2	-13.4%
FYR of Macedonia	..	..	..	..	1.9	2.0	2.0	2.0	2.1	2.1	2.1	8.1%
Malta	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	18.4%
Republic of Moldova	..	..	..	..	3.7	3.7	3.6	3.6	3.6	3.6	3.6	-3.7%
Montenegro ***	..	..	..	..	..	..	..	0.6	0.6	0.6	0.6	..
Romania	20.5	21.3	22.2	22.8	23.2	22.7	22.4	21.6	21.5	21.4	21.4	-7.8%
Russian Federation	..	..	..	..	148.3	148.1	146.3	143.2	141.9	141.9	141.9	-4.3%
Serbia ***	..	..	..	..	9.5	9.9	8.1	7.4	7.3	7.3	7.3	-23.9%
Tajikistan	..	..	..	..	5.3	5.8	6.2	6.5	6.8	6.9	7.0	31.6%
Turkmenistan	..	..	..	..	3.7	4.2	4.5	4.7	5.0	5.0	5.1	39.2%
Ukraine	..	..	..	..	51.9	51.5	49.2	47.1	46.1	45.9	45.7	-11.9%
Uzbekistan	..	..	..	..	20.5	22.8	24.7	26.2	27.8	28.6	29.3	43.1%
Former Soviet Union ****	245.2	254.4	265.8	277.7	..	..	..	..	..	..	..	..
Former Yugoslavia ****	20.3	20.9	21.7	22.4	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	297.6	308.6	322.1	335.7	342.9	343.5	340.4	336.6	337.5	338.6	339.6	-1.0%
Algeria	14.2	16.0	18.8	22.1	25.3	28.3	30.5	32.9	35.0	35.5	36.0	42.2%
Angola	6.0	6.6	7.6	9.1	10.3	12.1	13.9	16.5	18.6	19.1	19.6	89.8%
Benin	2.9	3.2	3.6	4.1	4.8	5.7	6.5	7.6	8.6	8.9	9.1	90.7%
Botswana	..	..	..	1.2	1.4	1.6	1.8	1.9	2.0	2.0	2.0	47.0%
Cameroon	7.0	7.8	9.1	10.5	12.2	13.9	15.7	17.6	19.2	19.6	20.0	64.4%
Congo	1.4	1.6	1.8	2.1	2.4	2.7	3.1	3.5	3.9	4.0	4.1	73.3%
Dem. Rep. of Congo	20.8	23.3	27.0	31.0	36.4	44.1	49.6	57.4	64.2	66.0	67.8	86.1%
Côte d'Ivoire	5.7	6.8	8.5	10.5	12.5	14.7	16.6	18.0	19.4	19.7	20.2	61.0%
Egypt	36.8	40.1	45.0	50.7	56.8	62.1	67.6	74.2	79.7	81.1	82.5	45.2%
Eritrea	..	..	..	..	..	3.2	3.7	4.5	5.1	5.3	5.4	..
Ethiopia	31.7	35.1	37.9	43.9	51.5	57.0	65.6	74.3	81.2	83.0	84.7	64.6%
Gabon	0.5	0.6	0.7	0.8	0.9	1.1	1.2	1.4	1.5	1.5	1.5	65.1%
Ghana	8.9	9.9	10.9	12.9	14.8	17.0	19.2	21.6	23.8	24.4	25.0	68.8%
Kenya	11.7	13.5	16.3	19.7	23.4	27.4	31.3	35.6	39.5	40.5	41.6	77.5%
Libya	2.1	2.5	3.1	3.9	4.3	4.8	5.2	5.8	6.3	6.4	6.4	48.2%
Morocco	15.7	17.3	19.6	22.3	24.8	26.9	28.8	30.4	31.6	32.0	32.3	30.2%
Mozambique	9.7	10.6	12.1	13.3	13.5	15.9	18.2	20.8	22.9	23.4	23.9	76.6%
Namibia	..	..	..	..	..	1.7	1.9	2.1	2.2	2.3	2.3	..
Nigeria	58.7	65.1	75.5	85.8	97.6	110.0	123.7	139.8	154.5	158.4	162.5	66.5%
Senegal	4.2	4.8	5.4	6.2	7.2	8.4	9.5	10.9	12.1	12.4	12.8	76.3%
South Africa	22.6	24.7	27.6	31.3	35.2	39.1	44.0	47.2	49.3	50.0	50.6	43.7%
Sudan	15.2	17.1	20.1	23.5	26.5	30.1	34.2	38.4	42.5	43.6	44.6	68.5%
United Rep. of Tanzania	14.0	16.0	18.7	21.8	25.5	29.9	34.0	38.8	43.5	44.8	46.2	81.4%
Togo	2.2	2.4	2.7	3.2	3.7	4.1	4.8	5.4	5.9	6.0	6.2	67.9%
Tunisia	5.2	5.6	6.4	7.3	8.2	9.0	9.6	10.0	10.4	10.5	10.7	30.9%
Zambia	4.3	4.9	5.8	6.8	7.9	8.9	10.2	11.5	12.7	12.9	13.5	71.4%
Zimbabwe	5.4	6.2	7.3	8.9	10.5	11.7	12.5	12.6	12.5	12.6	12.8	21.8%
Other Africa	70.4	77.4	89.6	100.5	115.9	127.1	147.3	169.7	190.3	195.8	200.9	73.3%
Africa	377.2	419.2	481.0	553.3	633.5	718.5	810.2	910.3	998.3	1 021.6	1 045.2	65.0%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

Population

millions

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	67.8	70.6	80.6	92.3	105.3	117.5	129.6	140.6	147.0	148.7	150.5	43.0%
Brunei Darussalam	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	61.1%
Cambodia	..	..	..	..	..	11.2	12.4	13.4	14.0	14.1	14.3	..
Chinese Taipei	14.9	16.1	17.8	19.3	20.3	21.3	22.2	22.7	23.0	23.2	23.4	15.4%
India	566.7	622.1	700.1	784.5	873.8	964.5	1 053.9	1 140.0	1 207.7	1 224.6	1 241.5	42.1%
Indonesia	121.4	134.1	150.8	168.1	184.3	199.4	213.4	227.3	237.4	239.9	242.3	31.5%
DPR of Korea	14.6	16.1	17.2	18.7	20.1	21.8	22.9	23.7	24.2	24.3	24.5	21.4%
Malaysia	11.2	12.3	13.8	15.8	18.2	20.7	23.4	26.1	27.9	28.4	28.9	58.5%
Mongolia	..	..	..	1.9	2.2	2.3	2.4	2.5	2.7	2.8	2.8	27.7%
Myanmar	26.8	29.5	32.9	36.1	39.3	42.1	45.0	46.3	47.6	48.0	48.3	23.1%
Nepal	12.2	13.4	15.0	16.9	19.1	21.6	24.4	27.3	29.4	30.0	30.5	59.8%
Pakistan	61.0	68.5	80.5	95.5	111.8	127.3	144.5	158.6	170.5	173.6	176.7	58.0%
Philippines	36.5	40.9	47.1	54.1	61.6	69.3	77.3	85.5	91.7	93.3	94.9	53.9%
Singapore	2.1	2.3	2.4	2.7	3.0	3.5	4.0	4.3	5.0	5.1	5.2	70.1%
Sri Lanka	12.7	13.5	14.7	15.8	17.0	18.1	19.1	19.6	20.5	20.7	20.9	22.7%
Thailand	38.0	42.4	47.5	52.3	57.1	59.7	63.2	66.7	68.7	69.1	69.5	21.8%
Vietnam	43.7	48.0	53.7	58.9	66.0	72.0	77.6	82.4	86.0	86.9	87.8	33.1%
Other Asia	28.4	30.6	32.7	35.5	40.2	34.4	38.7	43.5	47.8	49.1	50.3	25.2%
Asia	1 058.2	1 160.5	1 307.1	1 468.7	1 639.6	1 806.9	1 974.3	2 131.0	2 251.6	2 282.0	2 312.7	41.0%
People's Rep. of China	841.1	916.4	981.2	1 051.0	1 135.2	1 204.9	1 262.6	1 303.7	1 331.4	1 337.8	1 344.1	18.4%
Hong Kong, China	4.0	4.5	5.1	5.5	5.7	6.2	6.7	6.8	7.0	7.1	7.1	24.0%
China	845.2	920.9	986.3	1 056.5	1 140.9	1 211.0	1 269.3	1 310.5	1 338.4	1 344.9	1 351.2	18.4%
Argentina	24.4	26.1	28.1	30.4	32.6	34.9	36.9	38.7	40.1	40.4	40.8	24.9%
Bolivia	4.3	4.8	5.4	6.0	6.7	7.5	8.3	9.1	9.8	9.9	10.1	51.5%
Brazil	98.4	108.2	121.7	136.2	149.7	161.8	174.4	186.0	193.2	194.9	196.7	31.4%
Colombia	21.9	24.0	26.9	30.0	33.2	36.5	39.8	43.0	45.7	46.3	46.9	41.3%
Costa Rica	1.9	2.0	2.3	2.7	3.1	3.5	3.9	4.3	4.6	4.7	4.7	54.0%
Cuba	8.9	9.4	9.8	10.1	10.6	10.9	11.1	11.3	11.3	11.3	11.3	6.5%
Dominican Republic	4.6	5.1	5.8	6.5	7.2	7.9	8.6	9.3	9.8	9.9	10.1	39.8%
Ecuador	6.2	6.9	8.0	9.1	10.3	11.4	12.3	13.4	14.3	14.5	14.7	42.9%
El Salvador	3.8	4.2	4.7	5.0	5.3	5.7	5.9	6.1	6.2	6.2	6.2	16.8%
Guatemala	5.6	6.2	7.0	8.0	8.9	10.0	11.2	12.7	14.0	14.4	14.8	65.4%
Haiti	4.8	5.1	5.7	6.4	7.1	7.9	8.6	9.3	9.9	10.0	10.1	42.1%
Honduras	2.8	3.1	3.6	4.2	4.9	5.6	6.2	6.9	7.5	7.6	7.8	58.6%
Jamaica	1.9	2.0	2.1	2.3	2.4	2.5	2.6	2.7	2.7	2.7	2.7	13.3%
Netherlands Antilles	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	21.2%
Nicaragua	2.5	2.8	3.2	3.7	4.1	4.6	5.1	5.4	5.7	5.8	5.9	42.4%
Panama	1.6	1.7	2.0	2.2	2.4	2.7	3.0	3.2	3.5	3.5	3.6	47.8%
Paraguay	2.5	2.8	3.2	3.7	4.2	4.8	5.3	5.9	6.3	6.5	6.6	54.8%
Peru	13.6	15.1	17.3	19.5	21.7	23.8	25.9	27.6	28.8	29.1	29.4	35.6%
Trinidad and Tobago	1.0	1.0	1.1	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	10.8%
Uruguay	2.8	2.8	2.9	3.0	3.1	3.2	3.3	3.3	3.3	3.4	3.4	8.4%
Venezuela	11.0	12.7	15.0	17.5	19.8	22.0	24.3	26.6	28.4	28.8	29.3	48.2%
Other Non-OECD Americas	2.6	2.7	2.8	2.9	3.0	3.2	3.4	3.6	3.8	3.8	3.8	26.9%
Non-OECD Americas	227.2	249.1	278.8	310.5	341.7	371.8	401.8	429.9	450.2	455.2	460.2	34.7%
Bahrain	0.2	0.3	0.4	0.4	0.5	0.6	0.6	0.7	1.2	1.3	1.3	168.6%
Islamic Republic of Iran	29.4	32.8	38.6	46.5	54.9	59.8	65.3	69.7	73.1	74.0	74.8	36.3%
Iraq	10.4	11.8	13.8	15.7	18.2	20.9	24.3	27.6	31.1	32.0	33.0	81.2%
Jordan	1.6	1.8	2.2	2.6	3.2	4.2	4.8	5.4	5.9	6.0	6.2	95.0%
Kuwait	0.8	1.1	1.4	1.7	2.1	1.6	1.9	2.3	2.6	2.7	2.8	35.0%
Lebanon	2.5	2.8	2.8	2.9	2.9	3.5	3.7	4.1	4.2	4.2	4.3	44.5%
Oman	0.8	0.9	1.2	1.5	1.9	2.2	2.3	2.4	2.7	2.8	2.8	52.4%
Qatar	0.1	0.2	0.2	0.4	0.5	0.5	0.6	0.8	1.6	1.8	1.9	294.5%
Saudi Arabia	6.0	7.3	9.8	13.2	16.1	18.5	20.0	24.0	26.8	27.4	28.1	74.0%
Syrian Arab Republic	6.6	7.5	8.9	10.6	12.3	14.2	16.0	18.5	20.0	20.4	20.8	68.9%
United Arab Emirates	0.3	0.5	1.0	1.3	1.8	2.3	3.0	4.1	6.9	7.5	7.9	336.2%
Yemen	6.2	6.7	7.9	9.8	11.9	15.1	17.7	20.6	23.3	24.1	24.8	107.6%
Middle East	64.9	73.6	88.1	106.7	126.3	143.4	160.4	180.3	199.6	204.3	208.7	65.2%

CO₂ emissions / TPES

 tonnes CO₂ / terajoule

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World *	60.8	60.5	59.8	57.5	57.1	56.5	56.3	57.0	56.6	56.5	57.1	0.0%
<i>Annex I Parties</i>	..	..	..	..	59.5	57.3	56.9	56.3	54.8	54.9	55.3	-7.0%
<i>Annex II Parties</i>	66.0	64.2	62.3	59.5	58.3	56.5	56.4	56.2	54.4	54.8	55.1	-5.5%
<i>North America</i>	64.0	62.2	60.9	60.1	59.6	58.2	58.9	58.3	56.4	57.7	56.9	-4.5%
<i>Europe</i>	69.0	66.4	64.5	58.6	55.9	53.3	51.8	51.1	49.0	48.5	48.5	-13.1%
<i>Asia Oceania</i>	67.1	67.2	62.4	59.8	59.6	57.5	57.3	59.7	59.5	58.4	63.9	7.3%
<i>Annex I EIT</i>	..	..	..	..	62.5	60.3	58.7	56.6	55.9	54.8	55.6	-11.1%
<i>Non-Annex I Parties</i>	..	..	..	..	51.5	54.1	54.2	56.7	57.3	56.9	57.7	11.9%
<i>Annex I Kyoto Parties</i>	..	..	..	..	58.8	56.0	54.8	54.2	53.1	52.4	53.7	-8.6%
Non-OECD Total **	50.3	53.3	54.7	53.1	54.3	54.7	54.4	56.5	57.1	56.5	57.4	5.7%
OECD Total ***	66.4	64.7	62.9	60.5	58.9	57.2	57.0	56.4	55.0	55.3	55.6	-5.6%
Canada	57.4	54.4	53.1	49.8	49.0	47.7	50.3	48.7	49.4	50.2	50.2	2.5%
Chile	57.2	53.1	53.5	48.5	52.9	50.7	49.8	49.0	53.0	53.9	54.3	2.6%
Mexico	53.9	56.0	53.3	55.3	51.7	54.6	57.4	54.1	54.4	55.8	55.5	7.2%
United States	64.6	63.0	61.7	61.2	60.7	59.4	59.9	59.4	57.2	58.5	57.6	-5.1%
OECD Americas	63.7	62.0	60.5	59.8	59.1	58.0	58.7	58.0	56.2	57.5	56.7	-4.0%
Australia	66.7	71.2	71.4	72.5	72.0	73.7	74.8	80.0	79.1	77.2	77.1	7.1%
Israel	60.0	58.0	59.9	77.3	69.9	71.3	72.3	75.9	70.7	70.1	69.1	-1.1%
Japan	67.7	67.0	61.1	57.8	57.7	55.0	54.1	55.7	55.1	54.5	61.4	6.4%
Korea	73.3	75.0	72.1	68.4	58.8	59.2	55.6	53.3	53.7	53.9	53.9	-8.4%
New Zealand	47.5	46.5	43.7	41.9	41.4	40.5	43.3	48.0	42.6	40.5	39.9	-3.8%
OECD Asia Oceania	67.3	67.5	63.2	61.0	59.7	58.1	57.2	58.5	58.3	57.5	61.1	2.4%
Austria	61.8	59.5	57.4	56.2	54.3	53.0	51.6	52.8	48.0	48.9	49.5	-8.7%
Belgium	70.4	65.2	64.2	55.2	53.4	51.2	48.4	46.0	42.2	42.4	43.9	-17.8%
Czech Republic	79.4	83.5	84.3	84.0	74.8	71.2	71.0	63.6	62.6	62.0	62.0	-17.1%
Denmark	71.0	71.7	78.1	74.9	69.7	71.6	65.1	61.2	61.0	58.1	55.3	-20.6%
Estonia	..	..	..	..	87.0	73.5	74.1	78.0	73.7	79.3	82.3	-5.4%
Finland	52.3	53.8	53.6	44.9	45.8	46.3	41.0	38.5	39.6	41.4	38.2	-16.5%
France	65.1	62.3	57.5	42.2	37.6	35.7	35.9	34.3	32.9	32.6	31.0	-17.5%
Germany	76.6	74.3	70.6	67.8	64.6	61.6	58.5	57.0	56.2	55.7	57.3	-11.3%
Greece	69.2	70.3	72.3	74.3	78.1	79.9	77.1	75.0	73.2	72.8	74.8	-4.3%
Hungary	75.7	73.7	70.5	64.8	55.1	52.9	51.8	48.8	46.3	45.5	45.3	-17.8%
Iceland	37.0	34.7	27.7	21.8	21.6	20.7	16.5	15.0	9.2	8.6	7.7	-64.2%
Ireland	77.2	75.8	75.1	73.0	73.8	76.0	72.3	73.3	65.3	65.4	63.1	-14.4%
Italy	66.4	65.4	65.7	64.2	64.8	61.4	59.3	59.9	56.4	55.9	56.1	-13.4%
Luxembourg	90.7	76.6	80.0	77.4	73.0	61.1	57.3	62.1	60.3	59.7	59.7	-18.2%
Netherlands	60.8	57.0	61.9	60.7	56.7	57.7	56.1	55.3	53.8	53.5	53.8	-5.0%
Norway	42.2	39.4	36.5	32.5	32.2	33.4	30.7	32.4	29.7	29.1	32.3	0.5%
Poland	79.5	78.4	77.9	80.3	79.3	79.5	78.0	75.7	73.0	71.9	70.7	-10.8%
Portugal	55.0	56.3	56.9	53.7	56.0	57.0	57.5	56.7	52.6	48.8	49.8	-11.2%
Slovak Republic	65.4	62.4	66.6	62.7	63.5	54.9	50.3	48.3	47.8	47.2	46.6	-26.6%
Slovenia	..	..	..	..	55.8	55.2	52.5	51.1	51.0	50.5	50.3	-9.9%
Spain	67.2	65.0	66.2	59.0	54.4	55.1	55.6	57.1	52.8	50.1	51.4	-5.5%
Sweden	54.6	48.6	43.3	29.7	26.7	27.3	26.5	23.3	22.0	22.0	21.9	-18.1%
Switzerland	56.8	51.0	46.8	44.8	40.8	41.5	40.6	41.1	37.5	40.0	37.5	-8.0%
Turkey	50.6	52.9	53.9	57.5	57.5	59.2	62.7	61.2	62.7	60.4	60.7	5.6%
United Kingdom	71.4	69.4	68.7	64.8	63.7	57.1	56.2	57.2	56.5	57.1	56.3	-11.7%
OECD Europe ***	69.9	67.7	66.2	61.3	58.3	55.6	54.1	53.1	51.4	50.8	51.0	-12.5%
<i>European Union - 27</i>	..	..	..	..	59.2	56.1	54.3	53.4	51.5	51.1	51.2	-13.5%

* The ratio for the world has been calculated to include international marine bunkers and international aviation bunkers.

** Includes Estonia and Slovenia prior to 1990.

*** Excludes Estonia and Slovenia prior to 1990.

CO₂ emissions / TPEStonnes CO₂ / terrajoule

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	50.3	53.3	54.7	53.1	54.3	54.7	54.4	56.5	57.1	56.5	57.4	5.7%
Albania	54.0	53.5	59.0	63.2	55.8	33.4	41.3	43.9	39.9	42.9	42.6	-23.8%
Armenia	..	..	..	..	63.4	49.6	40.4	39.2	39.0	38.9	41.0	-35.3%
Azerbaijan	..	..	..	..	58.0	58.2	59.0	54.8	49.6	49.1	50.9	-12.1%
Belarus	..	..	..	..	65.3	59.3	56.8	55.2	55.6	56.2	53.5	-18.1%
Bosnia and Herzegovina	..	..	..	..	80.5	51.7	74.2	74.0	76.5	74.2	76.8	-4.6%
Bulgaria	78.9	74.2	70.5	63.2	63.4	55.2	53.9	55.4	57.9	59.2	61.2	-3.6%
Croatia	..	..	..	..	56.9	53.5	54.2	55.6	54.1	53.0	53.1	-6.6%
Cyprus **	72.2	70.8	71.9	72.3	67.5	70.9	70.1	75.3	70.6	70.6	69.9	3.5%
Georgia	..	..	..	..	64.0	51.8	38.3	36.4	41.3	37.8	42.2	-34.0%
Gibraltar	72.1	72.4	73.6	72.8	72.5	72.9	72.9	72.9	72.6	72.6	72.6	0.1%
Kazakhstan	..	..	..	..	76.9	76.6	75.6	73.8	75.1	75.0	71.6	-6.8%
Kosovo ***	..	..	..	..	..	..	77.8	80.3	81.1	82.0	80.1	..
Kyrgyzstan	..	..	..	..	71.6	44.3	45.4	46.4	49.9	53.4	51.4	-28.2%
Latvia	..	..	..	..	56.7	46.0	42.5	40.0	38.9	41.6	41.4	-26.9%
Lithuania	..	..	..	..	49.2	38.9	37.5	36.4	33.9	45.1	43.3	-12.0%
FYR of Macedonia	..	..	..	..	82.1	78.2	75.3	73.8	71.4	68.0	69.4	-15.5%
Malta	73.5	73.6	73.9	79.6	78.5	79.2	74.4	73.3	75.4	69.6	68.8	-12.3%
Republic of Moldova	..	..	..	..	72.9	59.8	53.9	52.4	55.2	55.3	56.6	-22.4%
Montenegro ***	..	..	..	..	..	..	..	40.6	39.0	50.4	50.5	..
Romania	65.1	64.8	64.5	63.7	64.3	60.2	57.4	58.8	53.9	51.5	54.5	-15.2%
Russian Federation	..	..	..	..	59.2	58.5	57.7	55.4	54.6	53.6	54.0	-8.7%
Serbia ***	..	..	..	..	74.4	76.2	74.0	73.1	71.3	70.4	73.5	-1.3%
Tajikistan	..	..	..	..	49.0	26.2	24.1	23.9	28.8	29.0	29.8	-39.2%
Turkmenistan	..	..	..	..	60.6	57.9	58.7	59.6	59.7	59.6	59.5	-1.9%
Ukraine	..	..	..	..	65.2	57.3	52.1	51.1	52.7	49.0	53.9	-17.3%
Uzbekistan	..	..	..	..	61.7	56.9	55.5	55.2	55.5	55.4	55.1	-10.7%
Former Soviet Union ****	62.0	65.3	65.8	61.2	..	..	..	..	..	..	..	..
Former Yugoslavia ****	68.9	70.4	62.1	70.7	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	62.7	65.5	65.7	61.7	61.9	59.0	57.4	55.9	55.9	55.0	55.7	-10.1%
Algeria	61.5	60.7	60.6	58.5	56.8	56.2	56.2	58.6	56.6	58.2	59.3	4.4%
Angola	10.3	11.6	14.0	13.8	16.3	14.8	16.2	18.3	26.7	28.1	27.7	69.9%
Benin	6.5	8.8	6.9	7.2	3.6	2.8	17.0	25.3	28.8	29.5	29.7	714.4%
Botswana	..	..	..	42.5	55.6	53.2	54.5	54.9	50.4	53.1	50.6	-8.9%
Cameroon	6.4	8.2	10.8	13.0	12.8	10.8	10.5	10.0	16.6	17.3	18.2	41.7%
Congo	27.1	26.3	26.8	23.7	19.1	14.5	14.6	18.3	25.9	28.6	29.6	55.6%
Dem. Rep. of Congo	9.0	8.2	8.8	7.7	6.0	3.8	2.4	2.7	3.0	3.1	3.2	-46.8%
Côte d'Ivoire	23.2	24.3	22.5	19.6	14.6	15.1	21.7	14.5	15.6	15.1	12.5	-13.9%
Egypt	62.3	62.4	66.0	60.1	57.9	56.3	59.5	58.1	57.8	57.9	58.0	0.1%
Eritrea	..	..	..	..	..	18.5	20.6	18.1	14.6	15.3	15.9	..
Ethiopia	2.6	2.1	2.3	2.0	2.7	2.6	3.0	3.7	4.3	3.9	4.1	53.9%
Gabon	10.5	13.8	22.2	29.7	18.2	23.4	22.5	24.0	25.6	26.3	26.0	42.9%
Ghana	15.4	15.3	13.5	11.9	12.2	12.2	15.8	18.7	23.3	24.6	24.5	100.3%
Kenya	14.6	13.8	14.5	12.8	12.3	11.4	13.3	11.2	13.6	13.9	13.8	11.8%
Libya	56.8	59.8	64.3	53.9	58.5	60.0	59.3	61.0	61.5	61.4	62.5	6.8%
Morocco	67.2	69.4	68.4	70.5	67.6	72.2	68.6	70.7	67.7	68.1	69.3	2.6%
Mozambique	10.0	8.4	8.2	5.6	4.4	4.3	4.4	4.3	5.6	6.0	6.7	52.7%
Namibia	..	..	..	..	..	47.1	43.1	45.6	47.7	48.1	47.1	..
Nigeria	3.9	6.7	12.2	12.6	9.9	9.6	11.1	12.4	9.3	10.8	10.7	8.1%
Senegal	23.3	27.6	31.2	32.3	30.1	31.7	35.9	39.8	39.4	38.9	38.5	28.0%
South Africa	82.4	89.2	76.3	63.2	66.6	63.3	64.8	61.3	61.0	62.2	62.1	-6.8%
Sudan	11.1	10.5	10.6	10.6	12.4	9.1	10.6	15.7	22.0	22.0	20.8	68.6%
United Rep. of Tanzania	4.8	4.7	4.7	4.2	4.2	5.5	4.6	7.0	6.6	7.0	7.2	72.2%
Togo	11.2	9.6	9.8	7.1	10.8	8.8	10.8	9.8	10.3	10.5	10.8	-0.0%
Tunisia	53.1	52.7	57.3	55.0	58.3	58.5	58.9	58.0	55.2	54.2	53.1	-9.0%
Zambia	23.4	26.9	17.8	13.6	11.5	8.4	6.5	6.9	5.1	5.1	5.9	-48.5%
Zimbabwe	31.8	29.0	29.3	30.9	41.1	36.0	30.5	25.3	21.7	23.0	24.3	-41.0%
Other Africa	6.9	7.7	9.5	7.6	8.3	8.5	8.6	9.0	9.1	9.5	9.7	17.8%
Africa	30.3	34.2	34.5	33.0	33.1	32.2	32.4	32.8	32.9	33.4	33.0	-0.4%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

CO₂ emissions / TPES

 tonnes CO₂ / terajoule

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	13.4	16.5	20.5	21.2	25.4	30.8	32.5	36.8	41.2	41.4	41.3	62.3%
Brunei Darussalam	53.7	45.4	46.5	39.3	44.9	47.7	44.4	51.9	58.2	58.3	55.5	23.5%
Cambodia	..	..	..	..	..	12.3	13.7	18.3	17.7	17.9	18.0	..
Chinese Taipei	74.0	70.9	62.3	51.3	56.6	59.2	61.1	61.4	58.5	59.1	58.2	2.8%
India	30.6	32.4	33.0	38.5	43.9	48.3	50.8	51.6	56.1	56.4	55.6	26.6%
Indonesia	17.1	22.0	29.5	31.9	35.4	39.1	42.1	44.7	45.3	46.4	48.7	37.6%
DPR of Korea	83.1	82.3	83.0	83.8	82.0	81.3	83.1	82.7	81.8	81.1	81.3	-0.8%
Malaysia	49.8	52.3	48.7	51.9	55.0	58.4	57.1	56.8	57.5	60.3	61.0	10.9%
Mongolia	..	..	..	88.7	88.7	89.1	87.8	86.3	86.1	87.2	86.3	-2.7%
Myanmar	13.8	11.4	13.1	12.7	9.1	13.9	17.4	17.0	11.7	13.7	14.0	54.8%
Nepal	1.2	1.9	2.7	2.6	3.6	6.2	9.0	7.9	8.2	9.5	9.3	155.8%
Pakistan	23.3	24.5	25.2	29.0	32.7	35.5	37.0	37.8	40.0	38.4	38.4	17.5%
Philippines	35.9	38.0	35.5	28.6	31.9	40.7	40.4	43.6	44.4	45.1	45.5	42.7%
Singapore	53.7	54.5	59.1	57.6	61.0	52.8	60.8	54.0	47.1	44.8	46.3	-24.1%
Sri Lanka	17.3	15.6	19.5	17.0	16.2	22.2	30.5	35.6	31.2	31.8	34.3	112.4%
Thailand	28.3	29.2	36.5	40.4	45.8	54.1	51.1	50.8	48.1	48.0	48.8	6.5%
Vietnam	29.2	28.7	24.5	25.6	23.0	30.3	36.6	46.0	50.8	52.5	53.6	133.1%
Other Asia	55.3	56.5	51.3	37.6	35.5	32.4	31.8	38.7	40.9	42.8	43.2	21.9%
Asia	33.0	35.0	37.3	39.7	43.1	46.5	48.4	49.6	51.7	52.1	52.2	21.1%
People's Rep. of China	49.7	52.7	56.9	59.5	61.6	69.1	68.1	72.7	71.0	68.8	69.7	13.1%
Hong Kong, China	72.9	71.1	75.0	80.0	90.7	80.7	71.1	76.9	73.0	71.6	72.2	-20.4%
China	49.9	52.9	57.0	59.7	61.9	69.2	68.1	72.7	71.0	68.8	69.7	12.6%
Argentina	58.7	56.8	54.6	51.0	51.8	52.1	54.5	54.2	53.9	54.4	54.7	5.7%
Bolivia	50.9	51.9	41.0	40.6	47.1	44.2	45.6	43.4	49.1	45.7	47.3	0.3%
Brazil	30.9	35.6	37.3	30.3	32.8	34.9	38.7	35.8	33.6	34.9	36.1	10.1%
Colombia	46.0	43.8	47.2	47.3	45.6	50.5	54.8	51.2	48.2	46.1	50.4	10.5%
Costa Rica	37.3	41.7	41.5	37.7	37.0	44.7	37.0	35.2	32.9	33.6	34.3	-7.4%
Cuba	45.4	47.2	48.1	48.7	45.6	48.0	50.3	55.8	61.3	62.0	59.7	30.9%
Dominican Republic	35.2	39.9	43.5	42.6	43.3	50.1	54.4	60.3	62.2	60.6	58.3	34.8%
Ecuador	37.8	45.0	50.2	49.9	52.5	54.0	52.9	52.1	57.2	59.6	57.1	8.7%
El Salvador	19.4	21.3	16.6	16.0	21.6	32.9	31.4	33.2	35.0	33.2	33.3	54.4%
Guatemala	20.0	21.8	26.6	20.3	17.4	26.1	28.7	31.9	28.5	24.0	24.5	41.1%
Haiti	5.9	5.7	7.0	10.0	14.5	12.8	16.7	18.3	19.8	20.2	15.9	9.7%
Honduras	19.2	20.4	21.5	19.8	21.6	29.9	35.5	41.5	39.3	38.2	38.5	77.6%
Jamaica	65.5	66.0	68.2	64.3	61.6	62.2	60.6	65.8	59.0	60.5	59.2	-3.9%
Netherlands Antilles	63.0	63.1	53.2	60.9	45.0	51.4	50.3	53.0	57.2	55.7	49.2	9.1%
Nicaragua	28.7	29.5	27.8	22.2	21.6	26.4	33.4	33.9	34.3	36.4	35.6	64.5%
Panama	36.4	44.2	49.4	41.0	40.9	49.2	45.9	56.5	55.2	54.1	55.1	34.6%
Paraguay	9.9	11.2	15.5	15.0	14.9	21.0	20.2	20.8	22.0	23.4	24.1	62.1%
Peru	40.7	42.5	43.6	41.2	47.1	51.6	51.8	50.5	53.1	51.9	51.9	10.0%
Trinidad and Tobago	55.7	60.0	49.5	45.1	45.4	47.7	46.4	48.0	47.3	47.8	46.6	2.6%
Uruguay	51.6	53.3	50.2	37.3	39.8	42.0	40.7	42.8	44.3	36.8	40.8	2.7%
Venezuela	63.6	60.0	62.3	57.6	57.6	54.7	53.6	53.2	57.6	57.4	54.2	-6.0%
Other Non-OECD Americas	39.5	43.1	40.8	56.4	61.0	61.4	62.4	61.0	60.5	61.5	62.4	2.3%
Non-OECD Americas	43.2	44.0	44.8	40.3	41.7	43.4	45.4	44.1	43.8	43.9	44.1	5.7%
Bahrain	51.1	59.5	63.0	59.7	64.2	56.3	57.5	59.1	57.6	58.2	57.0	-11.3%
Islamic Republic of Iran	59.9	64.1	56.6	65.0	61.6	59.3	61.2	58.4	57.5	57.6	58.7	-4.7%
Iraq	59.9	60.8	66.8	63.7	64.7	67.4	64.7	66.6	65.2	63.9	64.3	-0.7%
Jordan	64.9	67.5	67.1	67.7	67.4	67.7	70.5	64.5	61.9	63.1	66.9	-0.8%
Kuwait	54.8	55.6	60.7	63.2	75.3	58.0	62.4	63.4	61.9	59.7	62.2	-17.3%
Lebanon	58.6	62.3	63.6	67.1	66.7	69.6	68.7	68.9	69.4	68.6	69.5	4.2%
Oman	26.7	71.5	46.3	64.3	58.0	57.8	59.6	62.6	70.3	58.8	60.0	3.5%
Qatar	57.5	57.3	55.4	51.8	52.3	55.2	52.6	52.2	53.8	52.3	51.2	-2.0%
Saudi Arabia	41.3	61.3	76.1	63.7	63.0	55.9	58.9	53.4	54.9	54.6	58.4	-7.3%
Syrian Arab Republic	60.5	70.6	70.3	64.3	64.3	64.7	60.3	63.1	64.4	63.4	63.6	-1.1%
United Arab Emirates	57.8	60.2	63.1	62.0	60.7	60.1	60.2	59.9	59.3	59.6	59.9	-1.2%
Yemen	38.7	60.0	64.6	66.1	61.1	65.3	66.5	67.6	68.3	67.8	68.1	11.5%
Middle East	55.1	62.2	64.5	63.6	62.7	59.6	60.7	58.2	58.4	57.7	59.3	-5.4%

CO₂ emissions / GDP using exchange rateskilogrammes CO₂ / US dollar using 2005 prices

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World *	0.87	0.84	0.80	0.73	0.69	0.65	0.60	0.60	0.59	0.60	0.60	-13.9%
<i>Annex I Parties</i>	..	..	..	..	0.56	0.49	0.44	0.40	0.36	0.37	0.36	-35.6%
<i>Annex II Parties</i>	0.68	0.62	0.56	0.47	0.42	0.40	0.37	0.34	0.31	0.31	0.30	-29.3%
<i>North America</i>	0.97	0.89	0.80	0.66	0.61	0.57	0.51	0.46	0.41	0.42	0.40	-33.8%
<i>Europe</i>	0.51	0.46	0.43	0.37	0.32	0.29	0.26	0.25	0.21	0.22	0.20	-35.6%
<i>Asia Oceania</i>	0.47	0.45	0.39	0.32	0.31	0.31	0.31	0.30	0.28	0.28	0.29	-7.0%
<i>Annex I EIT</i>	..	..	..	..	2.43	2.34	1.89	1.50	1.25	1.29	1.28	-47.1%
<i>Non-Annex I Parties</i>	..	..	..	..	1.22	1.21	1.11	1.16	1.12	1.11	1.11	-9.7%
<i>Annex I Kyoto Parties</i>	..	..	..	..	0.53	0.44	0.39	0.37	0.33	0.33	0.33	-37.1%
Non-OECD Total **	1.60	1.62	1.58	1.62	1.69	1.55	1.39	1.38	1.27	1.26	1.26	-25.7%
OECD Total ***	0.70	0.64	0.59	0.50	0.45	0.43	0.39	0.36	0.33	0.33	0.32	-28.3%
Canada	0.85	0.80	0.75	0.62	0.57	0.56	0.53	0.49	0.45	0.44	0.43	-24.9%
Chile	0.69	0.66	0.58	0.51	0.58	0.48	0.53	0.47	0.47	0.47	0.49	-17.0%
Mexico	0.39	0.42	0.46	0.50	0.48	0.50	0.45	0.46	0.46	0.45	0.45	-6.7%
United States	0.98	0.90	0.80	0.67	0.61	0.57	0.51	0.46	0.41	0.42	0.40	-34.6%
OECD Americas	0.94	0.86	0.78	0.65	0.60	0.56	0.51	0.46	0.41	0.42	0.41	-32.4%
Australia	0.56	0.62	0.62	0.57	0.58	0.54	0.53	0.50	0.48	0.46	0.44	-23.5%
Israel	0.46	0.42	0.42	0.45	0.49	0.49	0.46	0.44	0.40	0.41	0.39	-21.1%
Japan	0.46	0.43	0.36	0.29	0.28	0.28	0.27	0.27	0.25	0.24	0.26	-6.9%
Korea	0.78	0.80	0.87	0.70	0.64	0.68	0.65	0.56	0.54	0.55	0.56	-12.6%
New Zealand	0.28	0.29	0.29	0.29	0.32	0.31	0.33	0.30	0.26	0.26	0.25	-20.7%
OECD Asia Oceania	0.48	0.47	0.41	0.35	0.33	0.35	0.35	0.34	0.32	0.32	0.33	-1.3%
Austria	0.38	0.34	0.32	0.29	0.26	0.25	0.22	0.24	0.20	0.21	0.20	-22.1%
Belgium	0.68	0.59	0.55	0.42	0.39	0.38	0.34	0.30	0.26	0.27	0.27	-31.0%
Czech Republic	2.16	1.91	1.86	1.85	1.54	1.27	1.15	0.92	0.76	0.77	0.75	-51.5%
Denmark	0.44	0.39	0.41	0.35	0.27	0.28	0.21	0.19	0.19	0.18	0.16	-40.7%
Estonia	..	..	..	..	3.56	2.26	1.49	1.21	1.08	1.32	1.27	-64.3%
Finland	0.54	0.50	0.53	0.41	0.39	0.41	0.32	0.28	0.28	0.31	0.27	-31.7%
France	0.46	0.40	0.36	0.26	0.22	0.21	0.19	0.18	0.16	0.16	0.15	-32.7%
Germany	0.72	0.65	0.60	0.54	0.43	0.35	0.31	0.29	0.26	0.26	0.25	-42.8%
Greece	0.25	0.29	0.31	0.37	0.45	0.46	0.44	0.40	0.36	0.35	0.37	-16.7%
Hungary	1.18	1.08	1.07	0.95	0.76	0.74	0.60	0.51	0.45	0.45	0.43	-43.7%
Iceland	0.29	0.28	0.22	0.18	0.18	0.19	0.16	0.13	0.12	0.12	0.11	-40.1%
Ireland	0.61	0.48	0.48	0.43	0.39	0.34	0.26	0.22	0.19	0.19	0.17	-57.6%
Italy	0.37	0.35	0.31	0.28	0.27	0.26	0.25	0.26	0.22	0.23	0.22	-18.9%
Luxembourg	1.63	1.14	1.00	0.74	0.54	0.34	0.25	0.30	0.25	0.26	0.25	-53.6%
Netherlands	0.48	0.46	0.47	0.41	0.36	0.35	0.29	0.29	0.26	0.27	0.25	-29.0%
Norway	0.24	0.20	0.19	0.16	0.15	0.14	0.12	0.12	0.12	0.12	0.12	-20.1%
Poland	2.11	1.94	2.28	2.29	1.90	1.65	1.11	0.96	0.78	0.80	0.75	-60.5%
Portugal	0.22	0.23	0.24	0.24	0.29	0.32	0.32	0.33	0.27	0.24	0.25	-13.3%
Slovak Republic	1.64	1.62	1.83	1.67	1.62	1.28	0.99	0.80	0.58	0.59	0.55	-66.4%
Slovenia	..	..	..	..	0.54	0.58	0.47	0.44	0.39	0.39	0.39	-27.5%
Spain	0.30	0.32	0.34	0.30	0.28	0.30	0.29	0.30	0.24	0.23	0.23	-18.7%
Sweden	0.47	0.40	0.35	0.25	0.20	0.21	0.16	0.14	0.11	0.12	0.11	-46.1%
Switzerland	0.16	0.15	0.15	0.15	0.13	0.13	0.12	0.12	0.10	0.10	0.09	-28.9%
Turkey	0.36	0.41	0.44	0.46	0.47	0.48	0.52	0.45	0.50	0.47	0.46	-1.2%
United Kingdom	0.64	0.55	0.49	0.42	0.36	0.31	0.26	0.23	0.20	0.20	0.19	-49.0%
OECD Europe ***	0.57	0.52	0.49	0.43	0.37	0.33	0.30	0.28	0.25	0.25	0.24	-35.9%
<i>European Union - 27</i>	..	..	..	..	0.40	0.35	0.31	0.29	0.25	0.25	0.24	-39.9%

* The ratio for the world has been calculated to include international marine bunkers and international aviation bunkers.

** Includes Estonia and Slovenia prior to 1990.

*** Excludes Estonia and Slovenia prior to 1990.

CO₂ emissions / GDP using exchange rates

 kilogrammes CO₂ / US dollar using 2005 prices

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	1.60	1.62	1.58	1.62	1.69	1.55	1.39	1.38	1.27	1.26	1.26	-25.7%
Albania	1.30	1.19	1.53	1.31	1.11	0.38	0.47	0.48	0.33	0.34	0.35	-68.5%
Armenia	..	..	..	..	5.04	1.59	1.24	0.84	0.74	0.68	0.75	-85.0%
Azerbaijan	..	..	..	..	4.60	6.78	3.96	2.33	0.92	0.84	0.94	-79.7%
Belarus	..	..	..	..	5.24	3.97	2.79	2.05	1.56	1.52	1.46	-72.2%
Bosnia and Herzegovina	..	..	..	..	10.26	1.28	1.57	1.43	1.55	1.56	1.75	-82.9%
Bulgaria	5.87	4.95	4.26	3.50	3.00	2.44	1.91	1.60	1.29	1.34	1.47	-51.1%
Croatia	..	..	..	..	0.51	0.52	0.49	0.46	0.42	0.41	0.41	-20.6%
Cyprus **	0.70	0.56	0.49	0.40	0.40	0.42	0.43	0.41	0.39	0.38	0.36	-10.1%
Georgia	..	..	..	..	2.77	2.38	1.02	0.68	0.69	0.60	0.71	-74.4%
Gibraltar	0.22	0.20	0.21	0.19	0.25	0.42	0.43	0.45	0.51	0.51	0.48	96.7%
Kazakhstan	..	..	..	..	4.71	5.43	3.24	2.75	2.77	3.03	2.82	-40.1%
Kosovo ***	..	..	..	..	..	..	1.90	1.75	1.78	1.78	1.68	..
Kyrgyzstan	..	..	..	..	7.32	2.85	2.16	1.97	1.69	2.05	2.07	-71.8%
Latvia	..	..	..	..	1.29	1.08	0.63	0.47	0.46	0.52	0.46	-64.2%
Lithuania	..	..	..	..	1.34	0.99	0.63	0.52	0.46	0.49	0.46	-65.9%
FYR of Macedonia	..	..	..	..	1.40	1.71	1.52	1.47	1.21	1.16	1.25	-11.2%
Malta	0.74	0.48	0.42	0.45	0.67	0.53	0.37	0.45	0.38	0.37	0.36	-45.7%
Republic of Moldova	..	..	..	..	5.06	4.94	3.06	2.57	2.24	2.26	2.12	-58.2%
Montenegro ***	..	..	..	..	..	..	..	0.74	0.59	0.88	0.86	..
Romania	3.03	2.45	2.13	1.78	1.88	1.47	1.16	0.96	0.70	0.66	0.72	-61.9%
Russian Federation	..	..	..	..	2.58	2.98	2.64	1.98	1.70	1.74	1.75	-32.5%
Serbia ***	..	..	..	..	1.45	2.01	2.02	1.95	1.64	1.64	1.75	21.0%
Tajikistan	..	..	..	..	2.91	1.71	1.52	1.01	0.94	0.90	0.87	-69.9%
Turkmenistan	..	..	..	..	5.53	6.53	5.78	5.90	4.09	4.26	4.04	-26.9%
Ukraine	..	..	..	..	5.02	5.97	4.90	3.55	2.90	3.00	2.99	-40.3%
Uzbekistan	..	..	..	..	10.68	11.16	10.73	7.59	5.26	4.72	4.74	-55.7%
Former Soviet Union ****	3.09	3.18	3.10	2.92	..	..	..	..	..	..	..	..
Former Yugoslavia ****	0.98	0.94	0.82	1.12	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	2.93	2.96	2.83	2.68	2.89	3.04	2.54	1.96	1.66	1.70	1.72	-40.6%
Algeria	0.35	0.36	0.55	0.66	0.77	0.82	0.79	0.78	0.86	0.84	0.87	12.6%
Angola	0.12	0.15	0.19	0.19	0.23	0.28	0.27	0.23	0.27	0.29	0.28	22.2%
Benin	0.23	0.33	0.23	0.22	0.11	0.08	0.40	0.62	0.82	0.86	0.86	656.7%
Botswana	..	..	..	0.60	0.65	0.60	0.53	0.43	0.39	0.42	0.37	-41.9%
Cameroon	0.15	0.16	0.19	0.18	0.22	0.23	0.20	0.18	0.26	0.26	0.26	16.2%
Congo	0.37	0.28	0.26	0.17	0.14	0.11	0.10	0.14	0.21	0.23	0.25	77.3%
Dem. Rep. of Congo	0.26	0.25	0.33	0.31	0.29	0.29	0.29	0.32	0.33	0.33	0.32	13.6%
Côte d'Ivoire	0.30	0.30	0.28	0.25	0.20	0.23	0.37	0.36	0.35	0.34	0.34	68.0%
Egypt	1.28	1.41	1.44	1.61	1.58	1.42	1.34	1.70	1.50	1.47	1.53	-3.4%
Eritrea	..	..	..	..	..	0.93	0.70	0.53	0.43	0.45	0.44	..
Ethiopia	0.25	0.22	0.25	0.27	0.32	0.33	0.36	0.36	0.32	0.27	0.27	-15.8%
Gabon	0.16	0.12	0.23	0.27	0.13	0.17	0.17	0.20	0.22	0.22	0.21	56.1%
Ghana	0.43	0.55	0.51	0.50	0.49	0.49	0.61	0.60	0.66	0.70	0.64	29.9%
Kenya	0.65	0.54	0.51	0.47	0.42	0.41	0.50	0.40	0.48	0.49	0.47	12.1%
Libya	0.09	0.26	0.34	0.58	0.77	1.03	1.10	1.03	1.00	1.04	1.67	115.6%
Morocco	0.42	0.51	0.55	0.55	0.53	0.67	0.63	0.66	0.59	0.61	0.64	19.5%
Mozambique	0.99	0.95	0.93	0.76	0.43	0.38	0.31	0.23	0.26	0.27	0.29	-31.6%
Namibia	..	..	..	..	..	0.36	0.31	0.34	0.35	0.35	0.34	..
Nigeria	0.14	0.25	0.47	0.66	0.46	0.43	0.50	0.49	0.29	0.33	0.32	-31.1%
Senegal	0.36	0.43	0.51	0.46	0.42	0.44	0.52	0.53	0.55	0.54	0.54	28.9%
South Africa	1.42	1.59	1.42	1.45	1.48	1.54	1.45	1.33	1.30	1.28	1.23	-16.9%
Sudan	0.48	0.39	0.42	0.46	0.49	0.31	0.30	0.37	0.41	0.39	0.36	-26.4%
United Rep. of Tanzania	0.39	0.32	0.29	0.27	0.23	0.31	0.26	0.36	0.29	0.30	0.30	30.3%
Togo	0.36	0.27	0.25	0.21	0.35	0.36	0.48	0.46	0.48	0.48	0.48	35.7%
Tunisia	0.59	0.56	0.68	0.67	0.74	0.72	0.69	0.63	0.54	0.55	0.54	-27.2%
Zambia	0.82	0.94	0.70	0.57	0.49	0.41	0.30	0.29	0.18	0.18	0.20	-59.0%
Zimbabwe	1.96	1.68	1.73	1.69	2.25	1.97	1.49	1.78	1.70	1.69	1.69	-25.0%
Other Africa	0.23	0.26	0.33	0.29	0.31	0.37	0.33	0.29	0.28	0.29	0.29	-5.9%
Africa	0.67	0.77	0.77	0.86	0.87	0.90	0.86	0.84	0.77	0.77	0.76	-12.5%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

CO₂ emissions / GDP using exchange rateskilogrammes CO₂ / US dollar using 2005 prices

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	0.18	0.28	0.36	0.37	0.47	0.57	0.55	0.61	0.65	0.65	0.62	32.8%
Brunei Darussalam	0.10	0.28	0.32	0.43	0.47	0.56	0.51	0.51	0.77	0.80	0.88	87.8%
Cambodia	..	..	..	..	..	0.52	0.49	0.42	0.44	0.43	0.43	..
Chinese Taipei	1.01	0.91	0.91	0.65	0.68	0.67	0.71	0.72	0.62	0.61	0.56	-17.8%
India	1.30	1.38	1.39	1.57	1.66	1.73	1.62	1.40	1.46	1.39	1.32	-20.3%
Indonesia	0.62	0.69	0.85	0.83	0.97	0.98	1.20	1.17	1.07	1.09	1.06	8.8%
DPR of Korea	8.51	6.17	4.92	3.68	2.79	2.33	2.41	2.49	2.19	2.32	2.31	-17.3%
Malaysia	0.80	0.76	0.76	0.82	0.87	0.92	0.99	1.05	1.01	1.03	1.04	19.6%
Mongolia	..	..	..	7.53	6.85	6.24	4.78	3.76	3.61	3.65	3.21	-53.1%
Myanmar	2.38	1.87	1.78	1.60	1.23	1.57	1.43	0.88	0.42	0.46	0.45	-63.4%
Nepal	0.09	0.13	0.19	0.16	0.21	0.32	0.44	0.37	0.35	0.40	0.39	84.9%
Pakistan	0.82	0.89	0.82	0.89	1.00	1.09	1.16	1.10	1.08	1.01	0.99	-1.6%
Philippines	0.74	0.74	0.63	0.58	0.62	0.83	0.82	0.69	0.58	0.58	0.57	-8.1%
Singapore	0.56	0.55	0.54	0.50	0.60	0.56	0.49	0.40	0.38	0.38	0.37	-39.0%
Sri Lanka	0.52	0.43	0.46	0.35	0.31	0.35	0.53	0.55	0.39	0.39	0.42	34.7%
Thailand	0.72	0.74	0.81	0.77	0.90	1.04	1.13	1.20	1.11	1.12	1.16	27.9%
Vietnam	1.69	1.73	1.45	1.22	0.97	1.06	1.19	1.51	1.64	1.74	1.75	80.3%
Other Asia	0.56	0.60	0.84	0.47	0.39	0.31	0.34	0.36	0.33	0.36	0.36	-8.0%
Asia	1.11	1.12	1.11	1.12	1.14	1.14	1.16	1.09	1.09	1.06	1.03	-9.5%
People's Rep. of China	6.44	6.78	6.59	4.79	4.27	3.22	2.34	2.39	1.95	1.89	1.90	-55.6%
Hong Kong, China	0.41	0.36	0.28	0.32	0.33	0.28	0.27	0.22	0.22	0.19	0.20	-40.5%
China	5.54	5.76	5.36	4.07	3.64	2.87	2.14	2.23	1.86	1.80	1.81	-50.3%
Argentina	0.85	0.79	0.77	0.81	0.94	0.81	0.84	0.83	0.74	0.70	0.66	-29.2%
Bolivia	0.54	0.64	0.75	0.84	0.91	0.99	0.87	0.99	1.11	1.18	1.21	33.3%
Brazil	0.36	0.37	0.35	0.30	0.32	0.34	0.39	0.37	0.33	0.35	0.36	12.7%
Colombia	0.65	0.55	0.53	0.53	0.49	0.51	0.48	0.40	0.35	0.34	0.34	-29.8%
Costa Rica	0.27	0.29	0.28	0.26	0.26	0.34	0.27	0.29	0.26	0.26	0.26	-3.0%
Cuba	1.11	1.08	1.17	0.82	0.88	0.83	0.81	0.59	0.60	0.53	0.49	-44.4%
Dominican Republic	0.49	0.53	0.50	0.45	0.47	0.55	0.60	0.51	0.41	0.38	0.36	-22.7%
Ecuador	0.34	0.40	0.55	0.57	0.55	0.57	0.62	0.65	0.71	0.70	0.65	19.2%
El Salvador	0.17	0.20	0.17	0.20	0.23	0.35	0.34	0.37	0.34	0.32	0.32	40.7%
Guatemala	0.26	0.28	0.29	0.24	0.20	0.30	0.36	0.39	0.35	0.32	0.31	50.6%
Haiti	0.12	0.12	0.14	0.18	0.22	0.24	0.33	0.48	0.50	0.47	0.47	113.4%
Honduras	0.41	0.42	0.38	0.35	0.39	0.53	0.57	0.71	0.65	0.63	0.64	65.9%
Jamaica	0.77	0.98	1.01	0.71	0.86	0.82	0.97	0.93	0.68	0.65	0.68	-20.5%
Netherlands Antilles	13.67	8.49	6.36	3.13	1.60	1.47	1.90	1.87	2.10	1.62	1.90	18.4%
Nicaragua	0.33	0.33	0.40	0.39	0.47	0.59	0.65	0.64	0.59	0.62	0.60	26.1%
Panama	0.52	0.56	0.44	0.34	0.33	0.41	0.39	0.44	0.36	0.36	0.37	9.3%
Paraguay	0.29	0.27	0.32	0.30	0.34	0.51	0.48	0.46	0.49	0.48	0.47	39.5%
Peru	0.45	0.44	0.43	0.38	0.44	0.41	0.41	0.36	0.37	0.37	0.37	-15.0%
Trinidad and Tobago	1.01	0.85	0.79	1.07	1.42	1.43	1.92	2.11	2.12	2.26	2.24	58.3%
Uruguay	0.57	0.55	0.45	0.31	0.30	0.30	0.31	0.31	0.36	0.28	0.31	2.2%
Venezuela	0.70	0.74	0.96	1.04	1.01	0.96	0.99	1.02	0.95	1.04	0.88	-13.1%
Other Non-OECD Americas	0.62	0.82	0.58	0.50	0.52	0.52	0.48	0.46	0.48	0.51	0.52	1.2%
Non-OECD Americas	0.56	0.53	0.52	0.48	0.50	0.50	0.54	0.52	0.48	0.49	0.47	-5.9%
Bahrain	1.82	1.73	1.48	2.23	2.00	1.43	1.41	1.35	1.32	1.30	1.25	-37.6%
Islamic Republic of Iran	0.62	0.75	1.09	1.46	1.76	2.09	2.15	2.20	2.25	2.10	2.11	20.0%
Iraq	0.12	0.15	0.17	0.36	0.99	4.70	1.65	2.39	2.33	2.61	2.54	157.1%
Jordan	0.59	0.96	0.93	1.25	1.65	1.54	1.55	1.43	1.16	1.10	1.13	-31.4%
Kuwait	0.31	0.40	0.66	1.17	0.79	0.73	0.90	0.87	0.90	0.89	0.86	9.2%
Lebanon	0.32	0.40	0.55	0.39	0.57	0.76	0.78	0.66	0.69	0.61	0.60	4.3%
Oman	0.06	0.13	0.32	0.40	0.62	0.67	0.78	0.91	1.35	1.38	1.46	135.7%
Qatar	0.15	0.32	0.43	0.82	0.97	1.15	0.83	0.85	0.71	0.69	0.65	-32.9%
Saudi Arabia	0.17	0.15	0.46	0.72	0.79	0.89	0.95	1.03	1.16	1.21	1.18	50.3%
Syrian Arab Republic	1.27	1.12	1.18	1.64	2.04	1.62	1.75	1.90	1.61	1.57	1.48	-27.3%
United Arab Emirates	0.16	0.12	0.23	0.46	0.59	0.66	0.62	0.60	0.72	0.75	0.75	27.4%
Yemen	0.63	0.65	0.74	0.72	0.82	0.88	0.97	1.11	1.15	1.14	1.11	36.1%
Middle East	0.30	0.33	0.48	0.80	1.00	1.23	1.18	1.23	1.30	1.29	1.26	26.2%

CO₂ emissions / GDP using purchasing power parities

 kilogrammes CO₂ / US dollar using 2005 prices

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World *	0.75	0.71	0.67	0.61	0.58	0.54	0.49	0.48	0.45	0.45	0.45	-23.2%
<i>Annex I Parties</i>	..	..	..	..	0.55	0.49	0.44	0.40	0.36	0.36	0.36	-35.2%
<i>Annex II Parties</i>	0.73	0.66	0.60	0.51	0.46	0.43	0.40	0.37	0.33	0.33	0.32	-29.7%
<i>North America</i>	0.97	0.89	0.80	0.66	0.61	0.57	0.51	0.46	0.41	0.42	0.40	-33.8%
<i>Europe</i>	0.57	0.51	0.47	0.41	0.35	0.32	0.29	0.27	0.24	0.24	0.23	-35.5%
<i>Asia Oceania</i>	0.54	0.52	0.45	0.37	0.36	0.36	0.35	0.35	0.33	0.32	0.33	-7.6%
<i>Annex I EIT</i>	..	..	..	..	1.15	1.15	0.94	0.74	0.62	0.63	0.63	-45.2%
<i>Non-Annex I Parties</i>	..	..	..	..	0.60	0.59	0.54	0.56	0.52	0.52	0.52	-13.8%
<i>Annex I Kyoto Parties</i>	..	..	..	..	0.52	0.46	0.40	0.37	0.33	0.34	0.33	-36.1%
Non-OECD Total **	0.72	0.74	0.73	0.73	0.76	0.70	0.62	0.61	0.56	0.55	0.55	-27.7%
OECD Total ***	0.72	0.66	0.60	0.52	0.46	0.44	0.40	0.37	0.33	0.34	0.33	-29.6%
Canada	0.86	0.80	0.75	0.62	0.57	0.57	0.53	0.49	0.45	0.44	0.43	-24.8%
Chile	0.41	0.39	0.35	0.30	0.35	0.29	0.32	0.28	0.28	0.28	0.29	-17.0%
Mexico	0.25	0.27	0.30	0.33	0.32	0.33	0.30	0.30	0.30	0.30	0.30	-6.7%
United States	0.98	0.90	0.80	0.67	0.61	0.57	0.51	0.46	0.41	0.42	0.40	-34.6%
OECD Americas	0.91	0.84	0.75	0.63	0.58	0.55	0.49	0.45	0.40	0.41	0.39	-32.7%
Australia	0.59	0.66	0.66	0.60	0.61	0.57	0.56	0.53	0.51	0.48	0.47	-23.4%
Israel	0.38	0.35	0.34	0.37	0.41	0.41	0.38	0.36	0.33	0.34	0.32	-21.1%
Japan	0.54	0.51	0.42	0.34	0.32	0.32	0.32	0.31	0.29	0.29	0.30	-6.9%
Korea	0.60	0.62	0.67	0.54	0.49	0.52	0.50	0.43	0.41	0.43	0.43	-12.6%
New Zealand	0.30	0.31	0.31	0.32	0.35	0.34	0.36	0.32	0.29	0.28	0.27	-20.7%
OECD Asia Oceania	0.54	0.53	0.46	0.39	0.37	0.38	0.38	0.36	0.34	0.34	0.35	-5.8%
Austria	0.42	0.38	0.36	0.32	0.29	0.27	0.24	0.27	0.22	0.24	0.23	-22.1%
Belgium	0.77	0.66	0.61	0.47	0.43	0.43	0.38	0.34	0.29	0.30	0.30	-31.0%
Czech Republic	1.29	1.14	1.11	1.11	0.92	0.76	0.68	0.55	0.45	0.46	0.45	-51.5%
Denmark	0.63	0.56	0.59	0.50	0.39	0.40	0.30	0.27	0.27	0.26	0.23	-40.7%
Estonia	..	..	..	..	2.22	1.41	0.93	0.76	0.68	0.82	0.79	-64.3%
Finland	0.66	0.61	0.65	0.50	0.47	0.50	0.39	0.34	0.34	0.38	0.32	-31.7%
France	0.53	0.45	0.41	0.30	0.25	0.24	0.22	0.21	0.19	0.19	0.17	-32.8%
Germany	0.77	0.70	0.65	0.58	0.46	0.38	0.33	0.31	0.28	0.28	0.26	-42.8%
Greece	0.22	0.26	0.28	0.33	0.40	0.41	0.39	0.35	0.32	0.31	0.33	-16.7%
Hungary	0.76	0.69	0.69	0.61	0.49	0.47	0.39	0.33	0.29	0.29	0.27	-43.7%
Iceland	0.46	0.44	0.35	0.29	0.29	0.30	0.26	0.21	0.19	0.19	0.17	-40.1%
Ireland	0.77	0.61	0.60	0.54	0.49	0.43	0.32	0.27	0.24	0.24	0.21	-57.6%
Italy	0.39	0.37	0.34	0.30	0.30	0.29	0.27	0.28	0.24	0.24	0.24	-19.0%
Luxembourg	1.93	1.35	1.19	0.87	0.64	0.41	0.30	0.36	0.30	0.30	0.29	-53.6%
Netherlands	0.54	0.51	0.53	0.46	0.40	0.39	0.32	0.32	0.29	0.30	0.28	-29.0%
Norway	0.33	0.28	0.26	0.22	0.21	0.20	0.17	0.17	0.16	0.17	0.16	-20.1%
Poland	1.22	1.12	1.32	1.32	1.10	0.95	0.64	0.56	0.45	0.46	0.43	-60.5%
Portugal	0.18	0.20	0.20	0.20	0.24	0.27	0.27	0.28	0.23	0.21	0.21	-13.3%
Slovak Republic	0.90	0.89	1.01	0.92	0.89	0.70	0.55	0.44	0.32	0.32	0.30	-66.4%
Slovenia	..	..	..	..	0.41	0.44	0.36	0.33	0.30	0.30	0.30	-27.4%
Spain	0.28	0.30	0.33	0.28	0.27	0.28	0.28	0.29	0.23	0.22	0.22	-18.7%
Sweden	0.59	0.50	0.43	0.32	0.25	0.26	0.20	0.17	0.14	0.15	0.14	-46.1%
Switzerland	0.23	0.22	0.21	0.21	0.18	0.18	0.16	0.16	0.14	0.14	0.13	-28.9%
Turkey	0.22	0.25	0.27	0.28	0.29	0.30	0.32	0.28	0.31	0.29	0.29	-1.2%
United Kingdom	0.74	0.63	0.57	0.49	0.42	0.36	0.31	0.27	0.23	0.24	0.21	-49.0%
OECD Europe ***	0.60	0.55	0.52	0.46	0.39	0.35	0.31	0.29	0.26	0.26	0.25	-36.9%
<i>European Union - 27</i>	..	..	..	..	0.42	0.37	0.32	0.30	0.26	0.26	0.25	-40.2%

* The ratio for the world has been calculated to include international marine bunkers and international aviation bunkers.

** Includes Estonia and Slovenia prior to 1990.

*** Excludes Estonia and Slovenia prior to 1990.

CO₂ emissions / GDP using purchasing power paritieskilogrammes CO₂ / US dollar using 2005 prices

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	0.72	0.74	0.73	0.73	0.76	0.70	0.62	0.61	0.56	0.55	0.55	-27.7%
Albania	0.57	0.52	0.67	0.57	0.49	0.16	0.21	0.21	0.15	0.15	0.15	-68.5%
Armenia	..	..	..	..	1.96	0.62	0.48	0.33	0.29	0.27	0.29	-85.0%
Azerbaijan	..	..	..	..	1.62	2.38	1.39	0.82	0.32	0.30	0.33	-79.7%
Belarus	..	..	..	..	1.90	1.44	1.01	0.74	0.56	0.55	0.53	-72.2%
Bosnia and Herzegovina	..	..	..	..	4.69	0.58	0.72	0.65	0.71	0.71	0.80	-82.9%
Bulgaria	2.24	1.88	1.62	1.33	1.14	0.93	0.73	0.61	0.49	0.51	0.56	-51.1%
Croatia	..	..	..	..	0.34	0.34	0.32	0.30	0.28	0.27	0.27	-20.6%
Cyprus **	0.64	0.51	0.45	0.37	0.37	0.38	0.40	0.38	0.36	0.35	0.33	-10.1%
Georgia	..	..	..	..	1.13	0.97	0.42	0.28	0.28	0.24	0.29	-74.4%
Gibraltar	0.26	0.24	0.26	0.24	0.30	0.51	0.52	0.55	0.62	0.62	0.59	96.5%
Kazakhstan	..	..	..	..	2.04	2.35	1.40	1.19	1.20	1.31	1.22	-40.1%
Kosovo ***	..	..	..	..	..	..	0.76	0.70	0.71	0.71	0.67	..
Kyrgyzstan	..	..	..	..	2.03	0.79	0.60	0.55	0.47	0.57	0.57	-71.8%
Latvia	..	..	..	..	0.69	0.58	0.34	0.25	0.25	0.28	0.25	-64.2%
Lithuania	..	..	..	..	0.72	0.53	0.34	0.28	0.25	0.26	0.24	-65.9%
FYR of Macedonia	..	..	..	..	0.52	0.64	0.57	0.55	0.45	0.43	0.47	-11.2%
Malta	0.52	0.34	0.30	0.32	0.47	0.37	0.26	0.32	0.27	0.26	0.26	-45.7%
Republic of Moldova	..	..	..	..	1.78	1.74	1.08	0.90	0.79	0.80	0.75	-58.2%
Montenegro ***	..	..	..	..	..	..	..	0.32	0.26	0.39	0.38	..
Romania	1.48	1.19	1.04	0.87	0.92	0.72	0.57	0.47	0.34	0.32	0.35	-61.9%
Russian Federation	..	..	..	..	1.16	1.34	1.19	0.89	0.77	0.78	0.79	-32.5%
Serbia ***	..	..	..	..	0.58	0.80	0.80	0.78	0.65	0.65	0.70	21.0%
Tajikistan	..	..	..	..	0.69	0.41	0.36	0.24	0.22	0.22	0.21	-69.9%
Turkmenistan	..	..	..	..	1.98	2.34	2.07	2.12	1.46	1.53	1.45	-26.9%
Ukraine	..	..	..	..	1.64	1.96	1.61	1.16	0.95	0.98	0.98	-40.3%
Uzbekistan	..	..	..	..	2.92	3.05	2.93	2.07	1.44	1.29	1.29	-55.7%
Former Soviet Union ****	1.31	1.35	1.32	1.24	..	..	..	..	..	..	..	..
Former Yugoslavia ****	0.55	0.54	0.47	0.63	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	1.28	1.29	1.24	1.17	1.25	1.34	1.12	0.86	0.73	0.74	0.75	-40.0%
Algeria	0.15	0.16	0.24	0.29	0.34	0.36	0.34	0.34	0.37	0.36	0.38	12.6%
Angola	0.07	0.08	0.11	0.11	0.13	0.16	0.15	0.13	0.15	0.16	0.15	22.2%
Benin	0.10	0.14	0.10	0.09	0.05	0.03	0.17	0.26	0.34	0.36	0.36	656.5%
Botswana	..	..	..	0.29	0.31	0.28	0.25	0.20	0.18	0.20	0.18	-41.9%
Cameroon	0.07	0.08	0.09	0.09	0.11	0.11	0.10	0.08	0.12	0.13	0.12	16.2%
Congo	0.19	0.15	0.13	0.09	0.07	0.05	0.05	0.07	0.11	0.12	0.13	77.5%
Dem. Rep. of Congo	0.12	0.11	0.15	0.14	0.13	0.13	0.13	0.14	0.15	0.15	0.15	13.7%
Côte d'Ivoire	0.16	0.17	0.15	0.13	0.11	0.12	0.20	0.19	0.19	0.19	0.19	68.1%
Egypt	0.34	0.38	0.39	0.43	0.43	0.38	0.36	0.46	0.40	0.40	0.41	-3.4%
Eritrea	..	..	..	..	..	..	0.38	0.29	0.22	0.18	0.19	..
Ethiopia	0.06	0.06	0.06	0.07	0.08	0.09	0.09	0.09	0.08	0.07	0.07	-15.9%
Gabon	0.08	0.06	0.11	0.13	0.06	0.08	0.08	0.10	0.11	0.11	0.10	56.2%
Ghana	0.18	0.23	0.21	0.20	0.20	0.20	0.25	0.25	0.27	0.29	0.26	30.0%
Kenya	0.25	0.21	0.20	0.18	0.17	0.16	0.19	0.16	0.19	0.19	0.19	12.1%
Libya	0.05	0.14	0.18	0.31	0.42	0.56	0.60	0.56	0.54	0.56	0.91	115.6%
Morocco	0.23	0.28	0.30	0.30	0.29	0.37	0.35	0.36	0.32	0.34	0.35	19.5%
Mozambique	0.47	0.45	0.44	0.36	0.20	0.18	0.14	0.11	0.12	0.13	0.14	-31.6%
Namibia	..	..	..	..	..	0.24	0.21	0.23	0.24	0.23	0.23	..
Nigeria	0.07	0.11	0.22	0.30	0.21	0.20	0.23	0.23	0.14	0.15	0.15	-31.1%
Senegal	0.17	0.20	0.25	0.22	0.20	0.21	0.25	0.26	0.26	0.26	0.26	28.8%
South Africa	0.87	0.97	0.86	0.89	0.90	0.94	0.88	0.81	0.79	0.78	0.75	-16.9%
Sudan	0.21	0.17	0.19	0.20	0.22	0.14	0.13	0.16	0.18	0.17	0.16	-26.4%
United Rep. of Tanzania	0.14	0.11	0.10	0.09	0.08	0.11	0.09	0.12	0.10	0.10	0.10	30.3%
Togo	0.16	0.12	0.11	0.09	0.16	0.16	0.22	0.21	0.22	0.22	0.22	35.7%
Tunisia	0.26	0.25	0.30	0.30	0.33	0.32	0.31	0.28	0.24	0.24	0.24	-27.2%
Zambia	0.44	0.51	0.38	0.31	0.27	0.22	0.16	0.16	0.10	0.10	0.11	-59.0%
Zimbabwe	2.90	2.48	2.55	2.50	3.33	2.91	2.21	2.64	2.51	2.50	2.50	-25.1%
Other Africa	0.10	0.11	0.14	0.12	0.13	0.15	0.14	0.13	0.12	0.12	0.12	-7.5%
Africa	0.32	0.37	0.37	0.40	0.41	0.42	0.40	0.38	0.35	0.35	0.34	-15.7%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

CO₂ emissions / GDP using purchasing power parities

 kilogrammes CO₂ / US dollar using 2005 prices

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	0.07	0.10	0.13	0.13	0.17	0.21	0.20	0.22	0.24	0.24	0.23	32.9%
Brunei Darussalam	0.05	0.15	0.17	0.23	0.26	0.30	0.28	0.27	0.42	0.44	0.48	87.7%
Cambodia	..	..	..	..	..	0.16	0.15	0.13	0.14	0.14	0.14	..
Chinese Taipei	0.61	0.55	0.55	0.39	0.41	0.40	0.43	0.43	0.37	0.36	0.34	-17.9%
India	0.43	0.46	0.46	0.52	0.55	0.57	0.54	0.46	0.48	0.46	0.44	-20.3%
Indonesia	0.25	0.28	0.35	0.34	0.39	0.40	0.49	0.48	0.43	0.44	0.43	8.8%
DPR of Korea	2.35	1.70	1.36	1.02	0.77	0.64	0.66	0.69	0.61	0.64	0.64	-17.3%
Malaysia	0.36	0.35	0.35	0.37	0.40	0.42	0.45	0.48	0.46	0.47	0.47	19.6%
Mongolia	..	..	..	2.61	2.37	2.16	1.66	1.30	1.25	1.26	1.11	-53.1%
Myanmar	0.58	0.46	0.44	0.39	0.30	0.39	0.35	0.22	0.10	0.11	0.11	-63.4%
Nepal	0.03	0.04	0.06	0.05	0.07	0.10	0.14	0.12	0.11	0.12	0.12	84.9%
Pakistan	0.26	0.29	0.26	0.29	0.32	0.35	0.37	0.35	0.35	0.33	0.32	-1.6%
Philippines	0.29	0.29	0.25	0.23	0.24	0.33	0.32	0.27	0.23	0.23	0.22	-8.1%
Singapore	0.36	0.35	0.35	0.32	0.38	0.36	0.31	0.26	0.24	0.24	0.23	-39.0%
Sri Lanka	0.18	0.15	0.16	0.12	0.11	0.12	0.19	0.19	0.13	0.14	0.15	34.7%
Thailand	0.29	0.29	0.32	0.30	0.36	0.41	0.45	0.47	0.44	0.45	0.46	27.9%
Vietnam	0.50	0.52	0.43	0.36	0.29	0.31	0.36	0.45	0.49	0.52	0.52	80.3%
Other Asia	0.31	0.33	0.47	0.27	0.25	0.18	0.19	0.19	0.18	0.18	0.18	-29.9%
Asia	0.42	0.43	0.43	0.43	0.44	0.45	0.46	0.43	0.42	0.41	0.40	-10.4%
People's Rep. of China	2.71	2.85	2.77	2.02	1.80	1.36	0.98	1.01	0.82	0.80	0.80	-55.6%
Hong Kong, China	0.30	0.27	0.20	0.23	0.24	0.20	0.20	0.16	0.16	0.14	0.14	-40.6%
China	2.49	2.60	2.46	1.84	1.64	1.27	0.94	0.97	0.80	0.77	0.78	-52.7%
Argentina	0.37	0.35	0.34	0.35	0.41	0.35	0.37	0.36	0.32	0.31	0.29	-29.2%
Bolivia	0.15	0.18	0.21	0.23	0.25	0.28	0.24	0.27	0.31	0.33	0.34	33.4%
Brazil	0.20	0.20	0.19	0.17	0.18	0.19	0.22	0.20	0.18	0.20	0.20	12.6%
Colombia	0.30	0.26	0.25	0.25	0.23	0.24	0.22	0.18	0.16	0.16	0.16	-29.8%
Costa Rica	0.14	0.15	0.15	0.13	0.14	0.18	0.14	0.15	0.13	0.13	0.13	-3.0%
Cuba	0.98	0.95	1.03	0.72	0.77	0.73	0.72	0.52	0.53	0.47	0.43	-44.4%
Dominican Republic	0.28	0.31	0.29	0.26	0.27	0.31	0.34	0.29	0.23	0.22	0.21	-22.6%
Ecuador	0.14	0.17	0.23	0.24	0.23	0.24	0.26	0.28	0.30	0.30	0.28	19.2%
El Salvador	0.08	0.10	0.09	0.10	0.11	0.18	0.17	0.18	0.17	0.16	0.16	40.8%
Guatemala	0.14	0.15	0.15	0.12	0.11	0.16	0.19	0.20	0.19	0.17	0.16	50.5%
Haiti	0.05	0.05	0.06	0.08	0.10	0.10	0.14	0.21	0.22	0.21	0.20	113.3%
Honduras	0.18	0.18	0.16	0.15	0.17	0.23	0.25	0.31	0.28	0.27	0.28	65.9%
Jamaica	0.46	0.58	0.60	0.42	0.51	0.48	0.57	0.55	0.40	0.39	0.40	-20.5%
Netherlands Antilles	15.24	9.47	7.09	3.49	1.79	1.64	2.12	2.08	2.35	1.81	2.12	18.4%
Nicaragua	0.13	0.13	0.15	0.15	0.18	0.23	0.25	0.25	0.23	0.24	0.23	26.1%
Panama	0.27	0.29	0.23	0.18	0.17	0.21	0.21	0.23	0.19	0.19	0.19	9.4%
Paraguay	0.10	0.09	0.10	0.10	0.11	0.16	0.16	0.15	0.16	0.16	0.15	39.6%
Peru	0.20	0.20	0.20	0.17	0.20	0.19	0.18	0.16	0.17	0.17	0.17	-15.0%
Trinidad and Tobago	0.62	0.52	0.48	0.65	0.86	0.87	1.17	1.28	1.29	1.38	1.37	58.3%
Uruguay	0.31	0.30	0.24	0.17	0.17	0.16	0.17	0.17	0.20	0.15	0.17	2.2%
Venezuela	0.38	0.41	0.53	0.57	0.56	0.53	0.55	0.56	0.52	0.57	0.48	-13.1%
Other Non-OECD Americas	0.50	0.69	0.48	0.41	0.44	0.44	0.41	0.39	0.40	0.43	0.48	8.3%
Non-OECD Americas	0.29	0.28	0.27	0.26	0.27	0.26	0.28	0.27	0.25	0.25	0.25	-7.3%
Bahrain	1.20	1.15	0.98	1.47	1.33	0.95	0.93	0.89	0.87	0.86	0.83	-37.6%
Islamic Republic of Iran	0.18	0.22	0.33	0.44	0.53	0.62	0.64	0.66	0.67	0.63	0.63	20.0%
Iraq	0.05	0.06	0.06	0.14	0.37	1.78	0.63	0.91	0.88	0.99	0.96	157.1%
Jordan	0.32	0.52	0.50	0.67	0.89	0.83	0.83	0.77	0.62	0.59	0.61	-31.4%
Kuwait	0.22	0.29	0.48	0.85	0.57	0.53	0.66	0.63	0.66	0.65	0.63	9.2%
Lebanon	0.18	0.23	0.31	0.22	0.32	0.43	0.44	0.37	0.39	0.34	0.34	4.2%
Oman	0.04	0.08	0.19	0.24	0.37	0.40	0.47	0.55	0.82	0.84	0.88	135.7%
Qatar	0.11	0.24	0.33	0.62	0.73	0.87	0.63	0.64	0.53	0.52	0.49	-32.8%
Saudi Arabia	0.11	0.09	0.30	0.47	0.51	0.57	0.61	0.66	0.75	0.78	0.76	50.3%
Syrian Arab Republic	0.48	0.42	0.45	0.62	0.77	0.61	0.66	0.72	0.61	0.59	0.56	-27.3%
United Arab Emirates	0.10	0.08	0.15	0.30	0.39	0.44	0.41	0.40	0.48	0.49	0.50	27.4%
Yemen	0.23	0.24	0.27	0.26	0.30	0.32	0.35	0.40	0.42	0.41	0.40	36.1%
Middle East	0.14	0.15	0.23	0.38	0.50	0.62	0.59	0.62	0.66	0.65	0.65	30.0%

CO₂ emissions / populationtonnes CO₂ / capita

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
World *	3.74	3.86	4.06	3.84	3.97	3.83	3.89	4.24	4.26	4.43	4.50	13.5%
<i>Annex I Parties</i>	..	..	..	..	11.82	10.89	11.16	11.23	10.09	10.46	10.33	-12.6%
<i>Annex II Parties</i>	12.20	12.18	12.64	11.82	12.25	12.31	12.89	12.81	11.28	11.63	11.33	-7.5%
<i>North America</i>	20.16	19.82	20.17	18.72	19.06	18.92	19.89	19.28	16.73	17.32	16.79	-11.9%
<i>Europe</i>	8.63	8.56	9.11	8.36	8.36	8.17	8.27	8.33	7.27	7.44	7.10	-15.1%
<i>Asia Oceania</i>	7.57	8.18	8.19	7.98	9.32	9.85	10.30	10.67	9.87	10.11	10.41	11.6%
<i>Annex I EIT</i>	..	..	..	..	12.39	8.78	8.11	8.48	8.10	8.59	8.90	-28.1%
<i>Non-Annex I Parties</i>	..	..	..	..	1.57	1.78	1.88	2.37	2.72	2.85	2.98	89.4%
<i>Annex I Kyoto Parties</i>	..	..	..	..	10.21	8.96	8.90	9.14	8.32	8.61	8.60	-15.7%
Non-OECD Total **	1.46	1.72	1.96	2.00	2.18	2.06	2.08	2.55	2.86	2.99	3.13	43.4%
OECD Total ***	10.47	10.48	10.93	10.24	10.48	10.50	10.96	10.92	9.81	10.14	9.95	-5.1%
Canada	15.46	16.33	17.41	15.56	15.46	15.73	17.26	17.22	15.40	15.47	15.37	-0.6%
Chile	2.13	1.63	1.90	1.60	2.36	2.70	3.41	3.58	3.86	4.08	4.42	87.6%
Mexico	1.95	2.45	3.23	3.42	3.26	3.26	3.56	3.72	3.72	3.86	3.96	21.2%
United States	20.66	20.19	20.47	19.06	19.46	19.28	20.18	19.50	16.88	17.53	16.94	-12.9%
OECD Americas	16.41	15.98	16.17	14.91	15.02	14.79	15.53	15.10	13.26	13.73	13.37	-11.0%
Australia	10.92	12.89	14.05	13.90	15.14	15.69	17.58	18.51	18.28	17.66	17.43	15.1%
Israel	4.66	4.91	5.03	5.77	7.17	8.34	8.76	8.44	8.49	8.93	8.66	20.8%
Japan	7.23	7.66	7.52	7.25	8.59	9.09	9.26	9.50	8.51	8.89	9.28	8.0%
Korea	1.58	2.18	3.26	3.76	5.35	7.95	9.31	9.75	10.48	11.42	11.81	120.7%
New Zealand	4.80	5.52	5.23	6.00	6.62	6.85	7.99	8.17	7.19	7.08	6.87	3.8%
OECD Asia Oceania	6.26	6.85	7.06	7.00	8.38	9.38	10.02	10.38	9.96	10.37	10.67	27.3%
Austria	6.49	6.62	7.37	7.18	7.35	7.47	7.70	9.08	7.68	8.35	8.13	10.6%
Belgium	12.09	11.82	12.75	10.34	10.83	11.37	11.58	10.79	9.35	9.93	9.89	-8.7%
Czech Republic	15.35	15.17	16.06	16.75	14.97	11.97	11.86	11.69	10.50	10.88	10.73	-28.3%
Denmark	11.09	10.37	12.21	11.83	9.85	11.12	9.51	8.93	8.49	8.47	7.48	-24.0%
Estonia	..	..	..	..	22.74	11.10	10.66	12.52	10.94	13.79	14.40	-36.6%
Finland	8.62	9.42	11.54	9.91	10.91	10.97	10.69	10.53	10.32	11.79	10.32	-5.4%
France	8.24	7.99	8.37	6.37	6.06	5.97	6.24	6.17	5.42	5.51	5.04	-16.9%
Germany	12.49	12.40	13.48	13.06	11.97	10.63	10.04	9.70	9.00	9.41	9.14	-23.6%
Greece	2.80	3.75	4.62	5.41	6.78	7.13	8.01	8.56	8.00	7.44	7.40	9.0%
Hungary	5.82	6.72	7.82	7.64	6.41	5.55	5.31	5.59	4.81	4.89	4.75	-25.8%
Iceland	6.79	7.37	7.62	6.71	7.39	7.32	7.64	7.40	6.47	6.08	5.81	-21.4%
Ireland	7.29	6.64	7.62	7.45	8.69	9.16	10.80	10.57	8.65	8.54	7.63	-12.2%
Italy	5.42	5.76	6.38	6.14	7.01	7.20	7.48	7.86	6.47	6.59	6.47	-7.6%
Luxembourg	45.11	33.69	32.75	27.03	27.12	19.63	18.31	24.43	20.05	20.78	20.10	-25.9%
Netherlands	9.82	10.31	11.78	10.63	10.43	11.06	10.81	11.19	10.66	11.26	10.45	0.2%
Norway	6.02	6.01	6.85	6.54	6.67	7.53	7.47	7.87	7.68	8.06	7.69	15.3%
Poland	8.74	9.94	11.61	11.28	9.00	8.65	7.60	7.68	7.53	7.93	7.79	-13.4%
Portugal	1.66	1.97	2.41	2.44	3.93	4.81	5.81	5.95	5.00	4.52	4.51	14.9%
Slovak Republic	8.54	9.20	11.08	10.50	10.71	7.61	6.92	7.07	6.18	6.49	6.22	-41.9%
Slovenia	..	..	..	..	6.68	7.06	7.08	7.79	7.43	7.47	7.43	11.2%
Spain	3.49	4.39	4.98	4.54	5.26	5.91	7.05	7.82	6.15	5.82	5.86	11.4%
Sweden	10.18	9.69	8.84	7.04	6.16	6.52	5.95	5.58	4.49	5.03	4.75	-22.9%
Switzerland	6.14	5.73	6.14	6.34	6.12	5.91	5.89	5.95	5.43	5.63	5.07	-17.2%
Turkey	1.14	1.48	1.60	1.88	2.30	2.55	3.12	3.16	3.56	3.64	3.86	67.8%
United Kingdom	11.15	10.31	10.14	9.63	9.60	8.90	8.90	8.85	7.52	7.74	7.06	-26.4%
OECD Europe ***	8.11	8.15	8.74	8.10	7.90	7.57	7.58	7.63	6.82	7.00	6.75	-14.5%
<i>European Union - 27</i>	..	..	..	..	8.57	8.04	7.94	8.07	7.12	7.30	7.04	-17.9%

* The ratio for the world has been calculated to include international marine bunkers and international aviation bunkers.

** Includes Estonia and Slovenia prior to 1990.

*** Excludes Estonia and Slovenia prior to 1990.

CO₂ emissions / populationtonnes CO₂ / capita

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Non-OECD Total *	1.46	1.72	1.96	2.00	2.18	2.06	2.08	2.55	2.86	2.99	3.13	43.4%
Albania	1.78	1.85	2.84	2.43	1.90	0.59	0.99	1.27	1.08	1.15	1.20	-36.6%
Armenia	..	..	..	..	5.77	1.06	1.11	1.34	1.38	1.31	1.50	-73.9%
Azerbaijan	..	..	..	..	7.68	4.41	3.46	3.67	2.77	2.63	2.92	-62.0%
Belarus	..	..	..	..	12.21	6.03	5.87	6.35	6.54	6.86	6.97	-42.9%
Bosnia and Herzegovina	..	..	..	..	5.49	0.97	3.66	4.13	5.24	5.33	6.08	10.7%
Bulgaria	7.36	8.28	9.46	9.05	8.60	6.34	5.16	5.96	5.59	5.89	6.58	-23.4%
Croatia	..	..	..	..	4.50	3.38	3.99	4.67	4.46	4.30	4.26	-5.3%
Cyprus **	2.86	3.39	5.07	5.13	6.65	7.73	9.09	9.34	9.37	8.99	8.63	29.7%
Georgia	..	..	..	..	6.92	1.71	1.04	0.99	1.21	1.11	1.40	-79.9%
Gibraltar	3.78	3.76	4.14	4.17	6.24	11.14	13.46	15.07	17.05	17.25	16.66	166.8%
Kazakhstan	..	..	..	..	14.46	10.59	7.59	10.37	12.39	14.32	14.14	-2.2%
Kosovo ***	..	..	..	..	..	..	2.96	3.83	4.70	4.82	4.73	..
Kyrgyzstan	..	..	..	..	5.11	0.97	0.90	0.94	0.96	1.15	1.21	-76.3%
Latvia	..	..	..	..	7.00	3.56	2.87	3.29	3.18	3.61	3.41	-51.2%
Lithuania	..	..	..	..	8.95	3.91	3.20	3.95	3.72	4.05	4.13	-53.9%
FYR of Macedonia	..	..	..	..	4.46	4.17	4.19	4.31	4.08	3.98	4.40	-1.5%
Malta	2.14	2.12	3.11	3.42	6.46	6.36	5.53	6.70	5.93	5.94	5.90	-8.6%
Republic of Moldova	..	..	..	..	8.17	3.21	1.79	2.14	2.06	2.23	2.22	-72.9%
Montenegro ***	..	..	..	..	..	..	2.68	2.58	3.93	3.93	3.95	..
Romania	5.61	6.60	7.92	7.62	7.22	5.18	3.88	4.40	3.67	3.52	3.82	-47.0%
Russian Federation	..	..	..	..	14.69	10.52	10.23	10.56	10.42	11.11	11.65	-20.7%
Serbia ***	..	..	..	..	6.43	4.46	5.25	6.61	6.19	6.28	6.86	6.5%
Tajikistan	..	..	..	..	2.06	0.42	0.35	0.36	0.41	0.42	0.43	-79.1%
Turkmenistan	..	..	..	..	12.12	7.92	8.12	10.07	9.97	11.22	12.06	-0.6%
Ukraine	..	..	..	..	13.26	7.63	5.94	6.49	5.48	5.92	6.24	-52.9%
Uzbekistan	..	..	..	..	5.84	4.46	4.79	4.15	3.75	3.55	3.76	-35.7%
Former Soviet Union ****	8.14	10.09	11.50	11.51	..	..	..	..	..	..	..	..
Former Yugoslavia ****	3.12	3.60	4.04	5.43	..	..	..	..	..	..	..	..
Non-OECD Europe and Eurasia *	7.54	9.28	10.60	10.68	11.63	7.73	7.08	7.51	7.27	7.72	8.08	-30.5%
Algeria	0.63	0.88	1.51	1.97	2.08	2.00	2.08	2.41	2.77	2.76	2.89	38.5%
Angola	0.27	0.30	0.35	0.32	0.39	0.33	0.36	0.44	0.76	0.82	0.80	106.5%
Benin	0.10	0.14	0.11	0.11	0.05	0.04	0.22	0.35	0.48	0.51	0.51	866.4%
Botswana	..	..	..	1.33	2.12	2.10	2.38	2.36	2.16	2.51	2.31	8.8%
Cameroon	0.10	0.13	0.18	0.23	0.22	0.18	0.18	0.17	0.25	0.26	0.26	16.2%
Congo	0.42	0.39	0.39	0.36	0.26	0.17	0.16	0.23	0.39	0.45	0.50	92.0%
Dem. Rep. of Congo	0.12	0.11	0.12	0.10	0.08	0.05	0.03	0.04	0.04	0.05	0.05	-40.7%
Côte d'Ivoire	0.42	0.45	0.40	0.29	0.21	0.22	0.37	0.32	0.32	0.31	0.29	39.0%
Egypt	0.55	0.64	0.93	1.28	1.38	1.34	1.50	2.06	2.17	2.20	2.28	65.5%
Eritrea	..	..	..	..	..	0.24	0.17	0.13	0.09	0.09	0.09	..
Ethiopia	0.04	0.03	0.04	0.03	0.04	0.04	0.05	0.06	0.07	0.07	0.07	61.1%
Gabon	0.87	1.26	1.87	2.13	0.97	1.22	1.12	1.26	1.40	1.45	1.42	46.2%
Ghana	0.22	0.24	0.21	0.17	0.18	0.19	0.27	0.30	0.38	0.42	0.43	136.6%
Kenya	0.28	0.26	0.27	0.24	0.23	0.21	0.25	0.21	0.27	0.28	0.28	19.1%
Libya	1.79	3.72	6.06	5.84	6.31	7.35	7.55	7.82	8.35	8.74	5.43	-13.9%
Morocco	0.44	0.57	0.71	0.74	0.79	0.97	1.02	1.30	1.35	1.44	1.55	96.1%
Mozambique	0.30	0.22	0.19	0.11	0.08	0.07	0.07	0.07	0.10	0.11	0.12	48.9%
Namibia	..	..	..	..	..	1.06	0.93	1.19	1.33	1.37	1.35	..
Nigeria	0.10	0.18	0.35	0.38	0.30	0.28	0.34	0.40	0.27	0.33	0.33	8.8%
Senegal	0.29	0.34	0.38	0.34	0.29	0.30	0.38	0.43	0.45	0.45	0.44	51.2%
South Africa	6.93	8.15	7.57	7.31	7.21	7.02	6.74	6.98	7.39	7.41	7.27	0.8%
Sudan	0.22	0.19	0.18	0.18	0.21	0.15	0.17	0.25	0.35	0.35	0.33	56.5%
United Rep. of Tanzania	0.11	0.09	0.09	0.07	0.07	0.08	0.08	0.13	0.12	0.13	0.14	102.2%
Togo	0.16	0.13	0.14	0.09	0.16	0.14	0.20	0.18	0.19	0.20	0.20	30.3%
Tunisia	0.71	0.85	1.23	1.32	1.48	1.59	1.88	2.01	2.04	2.08	1.98	33.6%
Zambia	0.80	0.90	0.58	0.41	0.33	0.23	0.17	0.18	0.13	0.13	0.16	-53.0%
Zimbabwe	1.34	1.17	1.09	1.08	1.53	1.27	1.01	0.82	0.64	0.69	0.74	-51.5%
Other Africa	0.11	0.12	0.15	0.12	0.12	0.13	0.13	0.14	0.14	0.15	0.16	24.5%
Africa	0.66	0.77	0.84	0.86	0.86	0.83	0.84	0.91	0.93	0.95	0.93	7.7%

* Includes Estonia and Slovenia prior to 1990.

** Please refer to Part I, Chapter 4, Geographical Coverage.

*** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

**** Prior to 1990, data for individual countries are not available separately; FSU includes Estonia and Former Yugoslavia includes Slovenia.

CO₂ emissions / populationtonnes CO₂ / capita

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	% change 90-11
Bangladesh	0.05	0.07	0.09	0.10	0.13	0.17	0.20	0.26	0.34	0.36	0.36	179.0%
Brunei Darussalam	3.04	8.97	13.91	13.40	12.89	15.49	13.54	13.28	18.92	19.84	21.94	70.2%
Cambodia	..	..	..	..	..	0.13	0.16	0.20	0.26	0.27	0.28	..
Chinese Taipei	2.08	2.63	4.08	3.69	5.64	7.43	9.85	11.57	10.90	11.66	11.31	100.6%
India	0.35	0.39	0.40	0.52	0.67	0.81	0.92	1.02	1.36	1.40	1.41	110.9%
Indonesia	0.21	0.28	0.46	0.52	0.79	1.08	1.28	1.48	1.60	1.71	1.76	121.8%
DPR of Korea	4.61	4.77	6.12	6.75	5.66	3.44	3.00	3.11	2.74	2.62	2.65	-53.2%
Malaysia	1.14	1.31	1.76	2.14	2.73	3.99	4.81	5.78	6.01	6.46	6.72	146.5%
Mongolia	..	..	..	6.02	5.77	4.36	3.66	3.72	4.32	4.58	4.66	-19.3%
Myanmar	0.17	0.14	0.16	0.16	0.10	0.16	0.21	0.23	0.15	0.17	0.17	65.5%
Nepal	0.02	0.02	0.03	0.03	0.05	0.08	0.13	0.11	0.12	0.14	0.13	187.7%
Pakistan	0.27	0.31	0.32	0.41	0.52	0.62	0.69	0.76	0.82	0.78	0.77	47.2%
Philippines	0.63	0.71	0.71	0.53	0.62	0.83	0.87	0.83	0.77	0.82	0.81	31.0%
Singapore	2.91	3.74	5.26	5.96	9.65	11.79	11.81	11.62	11.17	12.66	12.49	29.5%
Sri Lanka	0.22	0.20	0.25	0.22	0.22	0.30	0.56	0.68	0.58	0.64	0.72	227.0%
Thailand	0.43	0.50	0.71	0.80	1.41	2.35	2.45	3.16	3.15	3.42	3.50	148.3%
Vietnam	0.37	0.35	0.28	0.29	0.26	0.39	0.57	0.97	1.32	1.49	1.56	500.3%
Other Asia	0.30	0.33	0.51	0.29	0.25	0.27	0.28	0.35	0.40	0.45	0.47	83.6%
Asia	0.41	0.46	0.54	0.62	0.78	0.95	1.08	1.23	1.43	1.49	1.51	93.2%
People's Rep. of China	0.97	1.17	1.45	1.64	1.98	2.51	2.62	4.14	5.10	5.42	5.92	199.3%
Hong Kong, China	2.27	2.42	2.87	4.04	5.76	5.85	5.98	5.98	6.51	5.87	6.37	10.5%
China	0.98	1.17	1.46	1.65	2.00	2.52	2.64	4.15	5.11	5.42	5.92	196.5%
Argentina	3.40	3.28	3.40	2.91	3.06	3.38	3.76	3.93	4.29	4.40	4.50	47.2%
Bolivia	0.50	0.68	0.78	0.72	0.77	0.92	0.86	1.03	1.30	1.42	1.51	95.3%
Brazil	0.92	1.25	1.46	1.21	1.29	1.46	1.74	1.74	1.75	1.99	2.07	61.4%
Colombia	1.22	1.18	1.30	1.32	1.39	1.60	1.49	1.35	1.36	1.34	1.42	2.1%
Costa Rica	0.68	0.85	0.93	0.74	0.85	1.27	1.14	1.32	1.37	1.40	1.41	66.8%
Cuba	2.31	2.52	3.08	3.16	3.20	2.04	2.44	2.23	2.81	2.61	2.49	-22.2%
Dominican Republic	0.74	1.00	1.08	0.95	1.03	1.41	1.99	1.86	1.85	1.84	1.79	74.6%
Ecuador	0.58	0.86	1.32	1.29	1.25	1.35	1.40	1.79	2.13	2.14	2.11	68.6%
El Salvador	0.37	0.48	0.38	0.35	0.42	0.81	0.88	1.04	1.00	0.94	0.97	131.3%
Guatemala	0.41	0.49	0.60	0.40	0.36	0.58	0.75	0.83	0.79	0.72	0.71	96.6%
Haiti	0.08	0.08	0.11	0.12	0.13	0.11	0.16	0.21	0.23	0.20	0.21	58.9%
Honduras	0.40	0.42	0.46	0.39	0.44	0.63	0.71	1.01	0.98	0.96	0.98	123.1%
Jamaica	2.91	3.68	3.05	2.01	3.00	3.36	3.75	3.86	2.77	2.65	2.80	-6.6%
Netherlands Antilles	89.64	60.06	50.55	24.88	14.55	14.19	21.21	21.22	24.39	18.99	22.48	54.5%
Nicaragua	0.60	0.66	0.55	0.49	0.44	0.54	0.69	0.74	0.73	0.78	0.77	73.5%
Panama	1.63	1.81	1.50	1.23	1.06	1.54	1.67	2.11	2.25	2.39	2.62	147.8%
Paraguay	0.22	0.25	0.42	0.38	0.45	0.72	0.61	0.58	0.65	0.73	0.75	65.6%
Peru	1.15	1.22	1.19	0.94	0.89	1.00	1.02	1.05	1.33	1.44	1.52	71.6%
Trinidad and Tobago	6.29	5.78	7.36	8.19	9.36	9.73	16.31	25.78	30.08	31.89	30.29	223.7%
Uruguay	1.85	1.93	1.91	1.04	1.21	1.40	1.59	1.60	2.29	1.91	2.25	86.4%
Venezuela	4.71	4.95	6.15	5.45	5.32	5.37	5.21	5.57	5.92	6.30	5.44	2.2%
Other Non-OECD Americas	2.97	4.02	3.66	3.18	4.13	4.18	4.43	4.45	4.60	4.96	5.13	24.3%
Non-OECD Americas	1.53	1.70	1.89	1.63	1.69	1.83	2.03	2.10	2.22	2.36	2.36	39.9%
Bahrain	13.69	20.04	20.65	24.92	23.73	20.80	22.14	25.03	19.24	18.28	17.13	-27.8%
Islamic Republic of Iran	1.42	2.18	2.34	3.15	3.26	4.20	4.82	6.05	7.03	6.87	6.97	113.9%
Iraq	1.00	1.32	1.96	2.35	2.94	4.66	2.89	2.71	2.89	3.16	3.28	11.9%
Jordan	0.85	1.18	1.96	2.81	2.92	2.91	2.99	3.33	3.27	3.10	3.20	9.8%
Kuwait	17.31	14.30	19.30	21.29	13.75	22.18	25.31	30.97	30.16	29.77	30.07	118.6%
Lebanon	1.79	2.04	2.36	2.27	1.85	3.71	3.77	3.57	4.61	4.33	4.34	134.5%
Oman	0.33	0.80	1.89	3.69	5.48	6.61	8.90	11.62	19.84	20.51	22.31	307.1%
Qatar	18.87	30.05	34.60	33.28	30.13	37.57	40.56	44.33	35.17	36.06	38.17	26.7%
Saudi Arabia	2.11	3.06	10.11	9.27	9.76	11.09	12.46	13.53	15.05	15.99	16.28	66.8%
Syrian Arab Republic	0.91	1.20	1.48	1.99	2.28	2.31	2.49	2.97	2.86	2.81	2.56	11.8%
United Arab Emirates	8.97	9.15	18.81	26.38	28.68	29.65	28.22	26.64	21.70	20.95	21.02	-26.7%
Yemen	0.19	0.26	0.43	0.49	0.54	0.62	0.75	0.90	0.95	0.99	0.84	55.2%
Middle East	1.54	2.16	3.48	4.19	4.40	5.38	5.67	6.60	7.46	7.58	7.70	75.1%

Per capita emissions by sector in 2011 *

kilogrammes CO₂ / capita

	Total CO ₂ emissions from fuel combustion	Electricity and heat production	Other energy industry own use **	Manufacturing industries and construction	Transport	of which: road	Other sectors	of which: residential
World ***	4 504	1 878	222	935	1 006	743	463	266
<i>Annex I Parties</i>	10 331	4 324	513	1 514	2 620	2 253	1 360	788
<i>Annex II Parties</i>	11 329	4 405	609	1 602	3 197	2 819	1 517	829
<i>North America</i>	16 787	6 694	935	2 018	5 206	4 458	1 933	1 024
<i>Europe</i>	7 098	2 362	378	1 126	1 938	1 818	1 295	815
<i>Asia Oceania</i>	10 407	4 732	499	1 939	2 059	1 823	1 177	432
<i>Annex I EIT</i>	8 904	4 766	318	1 443	1 371	967	1 007	712
<i>Non-Annex I Parties</i>	2 978	1 320	155	803	441	399	259	147
<i>Annex I Kyoto Parties</i>	8 601	3 606	429	1 439	1 886	1 625	1 241	733
Non-OECD Total	3 129	1 426	150	829	447	386	276	164
OECD Total	9 948	3 960	552	1 425	2 685	2 390	1 326	735
Canada	15 365	3 125	1 678	2 941	4 815	4 039	2 807	1 228
Chile	4 419	1 680	169	914	1 253	1 134	403	208
Mexico	3 958	1 219	528	527	1 392	1 351	293	171
United States	16 944	7 089	852	1 916	5 250	4 505	1 837	1 001
OECD Americas	13 373	5 247	813	1 633	4 181	3 620	1 499	797
Australia	17 432	9 130	1 489	2 193	3 779	3 161	841	361
Israel	8 660	5 581	258	195	1 425	1 425	1 201	352
Japan	9 278	4 064	326	1 915	1 718	1 553	1 255	455
Korea	11 807	6 020	784	2 054	1 720	1 638	1 229	673
New Zealand	6 866	1 417	384	1 339	3 058	2 727	668	124
OECD Asia Oceania	10 671	5 065	557	1 902	1 956	1 765	1 190	486
Austria	8 133	1 995	937	1 444	2 567	2 481	1 190	786
Belgium	9 892	1 783	425	3 042	2 401	2 335	2 241	1 352
Czech Republic	10 734	5 997	230	1 849	1 575	1 498	1 084	644
Denmark	7 485	3 222	413	715	2 210	2 022	924	482
Estonia	14 404	11 406	139	696	1 666	1 574	497	141
Finland	10 323	4 621	731	1 823	2 277	2 089	871	258
France	5 042	691	237	927	1 875	1 800	1 311	700
Germany	9 141	3 968	318	1 396	1 819	1 750	1 641	1 088
Greece	7 395	3 790	237	640	1 723	1 513	1 006	773
Hungary	4 752	1 527	174	606	1 129	1 108	1 316	794
Iceland	5 808	10	-	1 453	2 536	2 420	1 809	29
Ireland	7 632	2 578	44	806	2 302	2 247	1 901	1 325
Italy	6 471	2 209	292	903	1 782	1 679	1 285	839
Luxembourg	20 102	2 085	-	1 874	13 282	13 246	2 861	1 741
Netherlands	10 452	3 327	673	2 445	2 002	1 948	2 006	998
Norway	7 692	586	2 207	1 497	2 737	1 986	665	92
Poland	7 787	4 105	195	926	1 231	1 202	1 330	822
Portugal	4 514	1 603	243	659	1 608	1 521	401	205
Slovak Republic	6 224	1 586	871	1 473	1 296	1 093	999	543
Slovenia	7 434	3 006	2	849	2 703	2 683	873	497
Spain	5 861	1 824	368	982	1 979	1 744	707	401
Sweden	4 752	874	245	959	2 375	2 274	298	35
Switzerland	5 065	352	120	673	2 143	2 103	1 777	1 170
Turkey	3 864	1 506	133	729	618	535	877	589
United Kingdom	7 062	2 655	481	783	1 861	1 718	1 282	1 000
OECD Europe	6 752	2 439	329	1 065	1 688	1 581	1 232	776
<i>European Union - 27</i>	7 038	2 622	334	1 087	1 771	1 669	1 224	768

* This table shows per capita emissions for the same sectors which are present throughout this publication. In particular, the emissions from electricity and heat production are shown separately and not reallocated as in the table on pages II.61-II.63.

** Includes emissions from own use in petroleum refining, the manufacture of solid fuels, coal mining, oil and gas extraction and other energy-producing industries.

*** World includes international bunkers in the transport sector.

Per capita emissions by sector in 2011

kilogrammes CO₂ / capita

	Total CO ₂ emissions from fuel combustion	Electricity and heat production	Other energy industry own use	Manufacturing industries and construction	Transport	of which: road	Other sectors	of which: residential
Non-OECD Total	3 129	1 426	150	829	447	386	276	164
Albania	1 204	9	30	269	722	700	174	72
Armenia	1 504	303	-	197	415	415	589	333
Azerbaijan	2 922	1 044	232	225	632	579	788	641
Belarus	6 972	3 172	312	1 540	1 162	1 012	785	490
Bosnia and Herzegovina	6 080	4 176	112	466	899	899	428	149
Bulgaria	6 584	4 553	136	578	1 055	976	262	152
Croatia	4 260	998	446	759	1 318	1 225	739	437
Cyprus *	8 625	4 495	-	664	2 669	2 665	797	372
Georgia	1 395	231	37	307	511	496	309	214
Gibraltar	16 657	4 151	-	2 017	10 489	10 489	-	-
Kazakhstan	14 143	4 759	2 781	4 164	753	705	1 686	901
Kosovo	4 727	3 594	-	386	550	548	198	98
Kyrgyzstan	1 211	214	-	394	509	509	94	6
Latvia	3 415	977	-	459	1 381	1 258	597	228
Lithuania	4 128	906	546	947	1 313	1 222	416	223
FYR of Macedonia	4 396	2 790	37	718	682	670	169	68
Malta	5 899	4 512	-	22	1 234	1 234	130	130
Republic of Moldova	2 216	985	-	290	311	297	630	449
Montenegro	3 948	2 746	5	152	1 014	1 002	32	20
Romania	3 823	1 813	211	684	659	603	457	286
Russian Federation	11 648	6 617	430	1 769	1 744	993	1 088	808
Serbia	6 855	4 641	38	846	787	716	543	256
Tajikistan	429	61	-	-	44	44	324	-
Turkmenistan	12 056	3 418	1 036	910	1 401	726	5 291	-
Ukraine	6 243	2 827	146	1 623	714	527	934	785
Uzbekistan	3 757	1 255	125	660	270	149	1 446	1 103
Non-OECD Europe and Eurasia	8 077	4 121	407	1 408	1 133	755	1 009	665
Algeria	2 887	791	309	375	899	854	512	403
Angola	801	112	10	138	348	309	193	64
Benin	514	12	-	16	360	359	126	125
Botswana	2 312	327	-	647	1 046	1 023	291	38
Cameroon	255	60	20	19	139	132	18	18
Congo	497	72	-	21	379	368	25	25
Dem. Rep. of Congo	48	-	-	17	26	26	5	5
Côte d'Ivoire	292	132	6	24	77	64	54	16
Egypt	2 283	868	175	489	484	449	268	183
Eritrea	94	53	-	4	28	28	10	9
Ethiopia	69	-	-	18	34	34	17	10
Gabon	1 419	436	19	501	298	298	165	91
Ghana	433	97	13	63	219	201	43	26
Kenya	280	56	6	80	113	107	25	21
Libya	5 433	2 732	165	413	1 870	1 869	252	252
Morocco	1 554	562	44	247	442	442	260	110
Mozambique	119	1	-	24	81	74	13	4
Namibia	1 349	15	-	124	771	723	439	-
Nigeria	325	72	40	27	145	145	42	14
Senegal	444	163	3	78	164	154	36	22
South Africa	7 267	4 461	66	1 260	1 011	944	468	215
Sudan	325	39	12	57	171	169	45	14
United Rep. of Tanzania	136	33	-	19	70	70	13	12
Togo	202	5	-	15	158	158	25	25
Tunisia	1 980	688	7	444	533	533	308	158
Zambia	156	3	4	81	54	36	14	-
Zimbabwe	742	250	5	143	100	91	243	7
Other Africa	155	51	-	20	69	60	16	8
Africa	926	394	38	156	235	223	102	57

* Please refer to Part I, Chapter 4, Geographical Coverage.

Per capita emissions by sector in 2011

kilogrammes CO₂ / capita

	Total CO ₂ emissions from fuel combustion	Electricity and heat production	Other energy industry own use	Manufacturing industries and construction	Transport	of which: road	Other sectors	of which: residential
Bangladesh	360	165	1	80	56	44	57	42
Brunei Darussalam	21 936	6 576	6 070	5 905	3 133	3 129	251	251
Cambodia	282	58	-	43	141	116	39	39
Chinese Taipei	11 315	6 400	588	2 391	1 529	1 480	407	196
India	1 406	725	51	380	137	124	113	64
Indonesia	1 757	568	114	487	474	418	115	67
DPR of Korea	2 651	420	2	1 663	54	54	513	5
Malaysia	6 721	3 100	726	1 135	1 491	1 472	269	72
Mongolia	4 656	2 849	10	581	581	393	635	326
Myanmar	171	39	14	54	48	35	15	-
Nepal	133	-	-	38	63	63	33	13
Pakistan	771	220	7	239	205	189	100	82
Philippines	813	358	14	133	246	214	63	26
Singapore	12 494	4 434	1 205	5 212	1 569	1 569	73	38
Sri Lanka	718	262	2	58	344	334	52	19
Thailand	3 498	1 171	222	986	838	828	281	77
Vietnam	1 564	484	17	538	374	364	150	88
Other Asia	468	140	-	107	180	159	41	13
Asia	1 506	674	67	408	241	223	117	62
People's Rep. of China	5 918	2 962	212	1 851	464	368	430	238
Hong Kong, China	6 366	4 239	-	1 014	769	769	345	112
China	5 920	2 968	211	1 846	465	370	429	237
Argentina	4 503	1 240	411	880	1 150	1 061	822	534
Bolivia	1 512	310	127	172	584	554	319	122
Brazil	2 075	184	139	637	925	830	191	88
Colombia	1 421	142	153	438	508	486	179	85
Costa Rica	1 413	133	9	209	972	967	90	29
Cuba	2 486	1 506	31	663	122	109	165	55
Dominican Republic	1 793	958	3	100	491	394	241	222
Ecuador	2 109	477	68	259	1 092	922	212	188
El Salvador	968	227	7	158	495	495	82	79
Guatemala	707	158	-	127	374	373	48	47
Haiti	211	27	-	56	108	39	20	20
Honduras	984	341	-	156	395	395	92	16
Jamaica	2 804	1 177	39	100	770	531	718	102
Netherlands Antilles	22 477	4 034	6 808	3 872	6 834	6 834	929	929
Nicaragua	771	307	16	94	285	285	69	16
Panama	2 621	786	-	639	1 010	1 009	186	136
Paraguay	747	-	-	22	682	675	42	30
Peru	1 520	397	144	299	573	536	107	62
Trinidad and Tobago	30 294	3 332	6 625	17 917	2 108	2 108	313	294
Uruguay	2 248	605	134	242	937	933	330	133
Venezuela	5 438	977	838	1 926	1 468	1 467	229	171
Other Non-OECD Americas	5 131	2 869	-	184	1 550	1 283	528	221
Non-OECD Americas	2 362	443	204	644	833	766	238	133
Bahrain	17 127	6 278	3 337	5 124	2 215	2 160	173	173
Islamic Rep. of Iran	6 965	1 851	358	1 394	1 567	1 534	1 796	1 411
Iraq	3 284	1 486	131	289	1 038	1 038	340	340
Jordan	3 203	1 511	109	339	853	850	391	245
Kuwait	30 070	16 051	4 917	4 808	4 099	4 099	193	193
Lebanon	4 340	2 716	-	287	1 176	1 176	162	162
Oman	22 305	5 697	3 029	10 258	3 078	3 078	243	102
Qatar	38 172	8 048	15 707	6 513	7 751	7 751	153	153
Saudi Arabia	16 284	6 718	1 876	3 633	3 890	3 811	167	167
Syrian Arab Republic	2 555	1 187	67	396	574	563	331	191
United Arab Emirates	21 023	7 543	274	9 203	3 919	3 700	85	85
Yemen	835	158	83	137	232	232	224	65
Middle East	7 701	2 732	701	1 750	1 712	1 680	806	629

Per capita emissions with electricity and heat allocated to consuming sectors * in 2011

kilogrammes CO₂ / capita

	Total CO ₂ emissions from fuel combustion	Other energy industry own use **	Manufacturing industries and construction	Transport	of which: road	Other sectors	of which: residential
World ***	4 504	313	1 702	1 030	743	1 459	780
<i>Annex I Parties</i>	10 331	763	2 876	2 691	2 253	4 001	2 169
<i>Annex II Parties</i>	11 329	756	2 922	3 244	2 819	4 408	2 239
<i>North America</i>	16 787	1 141	3 749	5 223	4 458	6 674	3 352
<i>Europe</i>	7 098	475	1 967	1 985	1 818	2 671	1 495
<i>Asia Oceania</i>	10 407	601	3 393	2 146	1 823	4 267	1 848
<i>Annex I EIT</i>	8 904	901	3 079	1 523	967	3 401	2 256
<i>Non-Annex I Parties</i>	2 978	205	1 494	452	399	827	434
<i>Annex I Kyoto Parties</i>	8 601	691	2 686	1 972	1 625	3 252	1 828
Non-OECD Total	3 129	237	1 515	469	386	908	515
OECD Total	9 948	686	2 698	2 726	2 390	3 838	1 951
Canada	15 365	1 837	4 138	4 836	4 039	4 553	2 092
Chile	4 419	185	2 018	1 267	1 134	950	482
Mexico	3 958	565	1 175	1 398	1 351	820	446
United States	16 944	1 051	3 626	5 263	4 505	7 004	3 536
OECD Americas	13 373	973	3 085	4 196	3 620	5 120	2 579
Australia	17 432	1 965	5 547	3 941	3 161	5 979	2 904
Israel	8 660	320	1 549	1 425	1 425	5 366	2 147
Japan	9 278	387	3 098	1 797	1 553	3 997	1 685
Korea	11 807	911	5 146	1 745	1 638	4 005	1 606
New Zealand	6 866	403	1 847	3 061	2 727	1 557	590
OECD Asia Oceania	10 671	664	3 758	2 026	1 765	4 223	1 788
Austria	8 133	971	2 152	2 642	2 481	2 368	1 456
Belgium	9 892	525	3 872	2 432	2 335	3 062	1 724
Czech Republic	10 734	649	3 934	1 730	1 498	4 421	2 450
Denmark	7 485	476	1 232	2 231	2 022	3 545	1 983
Estonia	14 404	754	2 896	1 711	1 574	9 043	5 295
Finland	10 323	790	3 905	2 303	2 089	3 325	1 655
France	5 042	273	1 094	1 893	1 800	1 782	911
Germany	9 141	428	3 075	1 919	1 750	3 719	2 189
Greece	7 395	386	1 657	1 737	1 513	3 615	2 041
Hungary	4 752	256	1 015	1 164	1 108	2 317	1 339
Iceland	5 808	-	1 461	2 536	2 420	1 812	30
Ireland	7 632	66	1 781	2 306	2 247	3 478	2 176
Italy	6 471	502	1 826	1 846	1 679	2 298	1 292
Luxembourg	20 102	-	2 884	13 318	13 246	3 900	2 000
Netherlands	10 452	940	3 668	2 042	1 948	3 801	1 624
Norway	7 692	2 243	1 720	2 741	1 986	988	274
Poland	7 787	622	2 082	1 292	1 202	3 791	2 261
Portugal	4 514	318	1 262	1 620	1 521	1 314	609
Slovak Republic	6 224	945	2 032	1 320	1 093	1 928	983
Slovenia	7 434	28	2 164	2 736	2 683	2 506	1 351
Spain	5 861	406	1 518	2 003	1 744	1 933	953
Sweden	4 752	260	1 249	2 388	2 274	855	361
Switzerland	5 065	120	791	2 160	2 103	1 995	1 279
Turkey	3 864	151	1 480	623	535	1 610	922
United Kingdom	7 062	550	1 655	1 893	1 718	2 964	1 872
OECD Europe	6 752	437	1 938	1 733	1 581	2 645	1 483
<i>European Union - 27</i>	7 038	458	1 994	1 822	1 669	2 765	1 546

* Emissions from electricity and heat generation have been allocated to final consuming sectors in proportion to the electricity and heat consumed. The detailed unallocated emissions are shown in the table on pages II.58-II.60.

** Includes emissions from own use in petroleum refining, the manufacture of solid fuels, coal mining, oil and gas extraction and other energy-producing industries.

*** World includes international bunkers in the transport sector.

Per capita emissions with electricity and heat allocated to consuming sectors in 2011

kilogrammes CO₂ / capita

	Total CO ₂ emissions from fuel combustion	Other energy industry own use	Manufacturing industries and construction	Transport	of which: road	Other sectors	of which: residential
Non-OECD Total	3 129	237	1 515	469	386	908	515
Albania	1 204	31	271	722	700	180	76
Armenia	1 504	-	263	422	415	820	446
Azerbaijan	2 922	335	357	669	579	1 561	1 073
Belarus	6 972	568	2 615	1 216	1 012	2 572	1 525
Bosnia and Herzegovina	6 080	243	1 841	944	899	3 052	2 023
Bulgaria	6 584	399	2 113	1 094	976	2 978	1 750
Croatia	4 260	465	972	1 331	1 225	1 492	873
Cyprus *	8 625	8	1 174	2 669	2 665	4 775	2 007
Georgia	1 395	49	387	521	496	438	304
Gibraltar	16 657	-	2 017	10 489	10 489	4 151	-
Kazakhstan	14 143	3 200	6 353	873	705	3 717	1 958
Kosovo	4 727	7	1 385	550	548	2 785	2 061
Kyrgyzstan	1 211	1	454	511	509	245	51
Latvia	3 415	-	601	1 391	1 258	1 422	706
Lithuania	4 128	591	1 185	1 316	1 222	1 035	604
FYR of Macedonia	4 396	102	1 577	688	670	2 029	1 327
Malta	5 899	-	1 895	1 234	1 234	2 770	1 357
Republic of Moldova	2 216	26	605	318	297	1 268	880
Montenegro	3 948	5	1 891	1 024	1 002	1 029	985
Romania	3 823	367	1 337	697	603	1 422	943
Russian Federation	11 648	1 344	4 066	1 982	993	4 256	2 937
Serbia	6 855	136	2 250	850	716	3 620	2 590
Tajikistan	429	-	26	44	44	359	12
Turkmenistan	12 056	1 472	1 775	1 463	726	7 347	504
Ukraine	6 243	417	2 720	804	527	2 302	1 618
Uzbekistan	3 757	151	945	295	149	2 366	1 238
Non-OECD Europe and Eurasia	8 077	900	2 845	1 266	755	3 066	1 967
Algeria	2 887	326	659	914	854	988	682
Angola	801	10	176	348	309	268	138
Benin	514	-	18	360	359	136	130
Botswana	2 312	-	794	1 046	1 023	472	130
Cameroon	255	20	51	139	132	46	31
Congo	497	-	55	379	368	63	63
Dem. Rep. of Congo	48	-	17	26	26	5	5
Côte d'Ivoire	292	6	66	77	64	144	72
Egypt	2 283	175	761	484	449	863	550
Eritrea	94	-	17	28	28	49	32
Ethiopia	69	-	18	34	34	17	10
Gabon	1 419	28	616	300	298	475	313
Ghana	433	13	112	219	201	91	61
Kenya	280	6	112	113	107	49	36
Libya	5 433	165	1 016	1 870	1 869	2 381	917
Morocco	1 554	63	453	448	442	590	288
Mozambique	119	-	25	81	74	13	4
Namibia	1 349	-	127	771	723	450	-
Nigeria	325	40	39	145	145	102	56
Senegal	444	3	119	164	154	158	83
South Africa	7 267	305	3 633	1 085	944	2 243	1 053
Sudan	325	12	63	171	169	79	35
United Rep. of Tanzania	136	-	35	70	70	31	27
Togo	202	-	16	158	158	29	28
Tunisia	1 980	7	693	549	533	731	361
Zambia	156	4	82	54	36	15	1
Zimbabwe	742	5	253	100	91	384	82
Other Africa	155	1	31	69	60	54	26
Africa	926	48	320	239	223	320	178

* Please refer to Part I, Chapter 4, Geographical Coverage.

Per capita emissions with electricity and heat allocated to consuming sectors in 2011

kilogrammes CO₂ / capita

	Total CO ₂ emissions from fuel combustion	Other energy industry own use	Manufacturing industries and construction	Transport	of which: road	Other sectors	of which: residential
Bangladesh	360	1	174	56	44	128	96
Brunei Darussalam	21 936	6 703	6 344	3 133	3 129	5 757	2 583
Cambodia	282	-	54	141	116	87	69
Chinese Taipei	11 315	699	5 995	1 562	1 480	3 059	1 449
India	1 406	51	705	150	124	500	224
Indonesia	1 757	114	684	474	418	486	301
DPR of Korea	2 651	2	1 873	54	54	723	5
Malaysia	6 721	726	2 497	1 497	1 472	2 001	733
Mongolia	4 656	10	1 577	613	393	2 456	1 438
Myanmar	171	14	68	48	35	40	17
Nepal	133	-	38	63	63	33	13
Pakistan	771	7	301	205	189	258	184
Philippines	813	14	256	246	214	297	145
Singapore	12 494	1 205	6 995	1 811	1 569	2 483	735
Sri Lanka	718	2	146	344	334	225	123
Thailand	3 498	222	1 486	839	828	952	336
Vietnam	1 564	17	794	374	364	378	265
Other Asia	468	11	159	180	159	118	51
Asia	1 506	69	707	248	223	483	236
People's Rep. of China	5 918	385	3 768	492	368	1 273	694
Hong Kong, China	6 366	-	1 325	769	769	4 273	1 228
China	5 920	383	3 754	493	370	1 291	697
Argentina	4 503	411	1 420	1 157	1 061	1 515	921
Bolivia	1 512	127	256	584	554	545	235
Brazil	2 075	146	718	926	830	286	131
Colombia	1 421	153	482	508	486	278	144
Costa Rica	1 413	9	236	972	967	195	81
Cuba	2 486	31	1 073	149	109	1 233	794
Dominican Republic	1 793	3	545	491	394	754	629
Ecuador	2 109	68	409	1 092	922	539	356
El Salvador	968	7	258	495	495	209	152
Guatemala	707	-	191	374	373	142	98
Haiti	211	-	67	108	39	36	29
Honduras	984	-	246	395	395	343	158
Jamaica	2 804	39	542	770	531	1 453	398
Netherlands Antilles	22 477	6 808	6 090	6 834	6 834	2 744	929
Nicaragua	771	16	201	285	285	269	117
Panama	2 621	-	717	1 010	1 009	893	387
Paraguay	747	-	22	682	675	42	30
Peru	1 520	144	515	573	536	288	152
Trinidad and Tobago	30 294	6 625	19 925	2 108	2 108	1 636	1 247
Uruguay	2 248	134	406	937	933	771	373
Venezuela	5 438	862	2 354	1 471	1 467	751	448
Other Non-OECD Americas	5 131	-	1 650	1 550	1 283	1 930	1 202
Non-OECD Americas	2 362	214	832	834	766	481	257
Bahrain	17 127	3 337	6 056	2 215	2 160	5 518	3 178
Islamic Rep. of Iran	6 965	377	2 062	1 570	1 534	2 956	1 960
Iraq	3 284	131	593	1 038	1 038	1 522	1 038
Jordan	3 203	120	720	853	850	1 509	875
Kuwait	30 070	7 152	4 808	4 099	4 099	14 010	9 131
Lebanon	4 340	-	1 000	1 176	1 176	2 165	1 197
Oman	22 305	3 029	11 053	3 078	3 078	5 145	2 890
Qatar	38 172	15 707	9 148	7 751	7 751	5 566	2 648
Saudi Arabia	16 284	2 159	4 622	3 890	3 811	5 613	3 509
Syrian Arab Republic	2 555	67	795	574	563	1 119	734
United Arab Emirates	21 023	274	10 074	3 919	3 700	6 756	2 451
Yemen	835	83	143	232	232	377	163
Middle East	7 701	769	2 340	1 714	1 680	2 878	1 751

Electricity output *

terawatt hours

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	% change 90-11
World	11 818.5	13 231.2	15 410.7	17 490.5	18 251.1	18 946.4	19 803.8	20 203.2	20 136.8	21 437.6	22 125.8	87.2%
<i>Annex I Parties</i>	8 940.5	9 360.4	10 347.3	10 827.9	11 073.3	11 174.9	11 363.4	11 382.3	10 897.9	11 362.4	11 276.3	26.1%
<i>Annex II Parties</i>	7 030.9	7 787.6	8 723.9	9 071.2	9 276.3	9 303.6	9 451.6	9 441.6	9 054.1	9 420.7	9 288.6	32.1%
<i>North America</i>	3 684.9	4 118.4	4 631.5	4 747.9	4 894.9	4 888.4	4 962.8	4 983.9	4 779.3	4 956.2	4 963.5	34.7%
<i>Europe</i>	2 323.9	2 500.1	2 794.4	2 982.8	3 020.1	3 044.1	3 076.6	3 095.2	2 939.2	3 058.9	2 985.3	28.5%
<i>Asia Oceania</i>	1 022.1	1 169.2	1 298.1	1 340.4	1 361.2	1 371.1	1 412.2	1 362.4	1 335.5	1 405.6	1 339.8	31.1%
<i>Annex I EIT</i>	1 851.0	1 484.9	1 496.6	1 603.8	1 632.8	1 692.8	1 717.9	1 740.1	1 646.9	1 728.3	1 756.2	-5.1%
<i>Non-Annex I Parties</i>	2 878.0	3 870.8	5 063.4	6 662.6	7 177.8	7 771.5	8 440.4	8 820.9	9 238.9	10 075.2	10 849.5	277.0%
<i>Annex I Kyoto Parties</i>	5 639.5	5 689.2	6 168.5	6 495.7	6 609.2	6 689.5	6 813.8	6 803.6	6 505.2	6 759.8	6 685.9	18.6%
Non-OECD Total	4 189.2	4 685.8	5 682.2	7 244.8	7 750.3	8 372.5	9 023.5	9 407.1	9 739.7	10 582.4	11 323.7	170.3%
OECD Total	7 629.3	8 545.4	9 728.5	10 245.7	10 500.7	10 573.9	10 780.3	10 796.2	10 397.1	10 855.2	10 802.2	41.6%
Canada	482.0	560.0	605.6	599.9	626.0	613.4	638.9	640.9	613.9	601.9	636.9	32.1%
Chile	18.4	28.0	40.1	51.2	52.5	55.3	58.5	59.7	60.7	60.4	65.7	257.7%
Mexico	115.8	152.2	204.2	232.6	243.8	249.5	257.3	261.9	261.0	271.1	295.8	155.4%
United States	3 202.8	3 558.4	4 025.9	4 148.1	4 268.9	4 275.0	4 323.9	4 343.0	4 165.4	4 354.4	4 326.6	35.1%
OECD Americas	3 819.1	4 298.7	4 875.7	5 031.8	5 191.2	5 193.2	5 278.6	5 305.5	5 101.1	5 287.7	5 325.1	39.4%
Australia	154.3	172.8	209.9	229.6	228.3	232.7	243.0	243.1	248.7	252.1	252.6	63.7%
Israel	20.9	30.4	42.7	47.3	48.6	50.6	53.8	57.0	55.0	58.6	59.6	185.4%
Japan	835.5	960.3	1 049.0	1 068.3	1 089.9	1 094.8	1 125.5	1 075.5	1 043.4	1 108.7	1 042.7	24.8%
Korea	105.4	181.1	288.5	366.6	387.9	402.3	425.9	443.9	451.7	496.7	520.1	393.5%
New Zealand	32.3	36.1	39.2	42.5	43.0	43.6	43.8	43.8	43.5	44.9	44.5	37.9%
OECD Asia Oceania	1 148.3	1 380.7	1 629.3	1 754.3	1 797.7	1 823.9	1 891.9	1 863.3	1 842.2	1 960.9	1 919.5	67.2%
Austria	49.3	55.2	59.9	61.9	64.1	62.1	62.6	64.5	66.3	67.9	62.2	26.1%
Belgium	70.3	73.5	82.8	84.4	85.7	84.3	87.5	83.6	89.8	93.8	89.0	26.6%
Czech Republic	62.3	60.6	72.9	83.8	81.9	83.7	87.8	83.2	81.7	85.3	86.8	39.3%
Denmark	26.0	36.8	36.1	40.4	36.2	45.6	39.3	36.6	36.4	38.8	35.2	35.4%
Estonia	17.4	8.8	8.5	10.3	10.2	9.7	12.2	10.6	8.8	13.0	12.9	-25.9%
Finland	54.4	64.0	70.0	85.8	70.6	82.3	81.2	77.4	72.1	80.7	73.5	35.1%
France	417.2	491.1	536.1	569.1	571.5	569.3	564.2	569.2	530.8	564.3	556.9	33.5%
Germany	547.7	532.8	572.3	608.5	613.4	629.4	629.5	631.2	584.3	622.0	602.4	10.0%
Greece	34.8	41.3	53.4	58.8	59.4	60.2	62.7	62.9	61.1	57.4	59.2	70.2%
Hungary	28.4	34.0	35.2	33.7	35.8	35.9	40.0	40.0	35.9	37.4	36.0	26.5%
Iceland	4.5	5.0	7.7	8.6	8.7	9.9	12.0	16.5	16.8	17.1	17.2	281.6%
Ireland	14.2	17.6	23.7	25.2	25.6	27.1	27.8	29.9	28.0	28.4	27.7	94.4%
Italy	213.1	237.4	269.9	295.8	296.8	307.7	308.2	313.5	288.3	298.8	300.6	41.1%
Luxembourg	0.6	0.5	0.4	3.4	3.3	3.5	3.2	2.7	3.2	3.2	2.6	323.9%
Netherlands	71.9	80.9	89.6	102.4	100.2	98.4	105.2	107.6	113.5	118.1	113.0	57.0%
Norway	121.6	122.2	142.5	110.1	137.2	121.2	136.1	141.2	131.0	123.2	126.9	4.3%
Poland	134.4	137.0	143.2	152.6	155.4	160.8	158.8	154.7	151.1	157.1	163.1	21.4%
Portugal	28.4	33.2	43.4	44.8	46.2	48.6	46.9	45.5	49.5	53.7	51.9	83.0%
Slovak Republic	25.5	26.4	30.8	30.5	31.4	31.3	27.9	28.8	25.9	27.5	28.3	10.9%
Slovenia	12.4	12.9	13.6	15.3	15.1	15.1	15.0	16.4	16.4	16.2	15.9	27.9%
Spain	151.2	165.6	220.9	276.7	289.4	295.6	301.8	311.0	291.9	298.3	289.0	91.2%
Sweden	146.0	148.3	145.2	151.7	158.4	143.3	148.8	149.9	136.6	148.5	150.3	2.9%
Switzerland	55.0	62.2	66.1	63.9	57.8	62.1	66.4	67.0	66.7	66.1	62.9	14.4%
Turkey	57.5	86.2	124.9	150.7	162.0	176.3	191.6	198.4	194.8	211.2	229.4	298.6%
United Kingdom	317.8	332.5	374.4	391.3	395.4	393.4	393.0	384.9	373.1	378.6	364.9	14.8%
OECD Europe	2 661.9	2 866.1	3 223.5	3 459.6	3 511.8	3 556.8	3 609.8	3 627.3	3 453.8	3 606.5	3 557.6	33.6%
<i>European Union - 27</i>	2 567.8	2 713.0	2 995.4	3 254.1	3 275.5	3 319.3	3 333.7	3 339.7	3 172.3	3 314.7	3 250.7	26.6%

* Includes electricity from both electricity-only and combined heat and power plants, and from both main activity producer and autoproducer plants.

Electricity output

terawatt hours

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	% change 90-11
Non-OECD Total	4 189.2	4 685.8	5 682.2	7 244.8	7 750.3	8 372.5	9 023.5	9 407.1	9 739.7	10 582.4	11 323.7	170.3%
Albania	3.2	4.4	4.7	5.6	5.4	5.5	2.9	3.8	5.2	7.6	4.2	30.1%
Armenia	10.4	5.6	6.0	6.0	6.3	5.9	5.9	5.8	5.7	6.5	7.4	-28.3%
Azerbaijan	23.2	17.0	18.7	21.7	22.9	24.5	21.8	21.6	18.9	18.7	20.3	-12.3%
Belarus	39.5	24.9	26.1	31.2	31.0	31.8	31.8	35.0	30.4	34.9	32.2	-18.6%
Bosnia and Herzegovina	14.6	4.4	10.4	12.7	12.6	13.3	11.8	14.8	15.7	17.1	15.3	4.4%
Bulgaria	42.1	41.8	40.6	41.4	44.0	45.5	42.9	44.6	42.4	46.0	50.0	18.7%
Croatia	8.7	8.9	10.7	13.2	12.4	12.3	12.1	12.2	12.7	14.0	10.7	23.1%
Cyprus *	2.0	2.5	3.4	4.2	4.4	4.7	4.9	5.1	5.2	5.3	4.9	149.7%
Georgia	13.7	8.2	7.4	6.9	7.3	7.3	8.3	8.5	8.6	10.1	10.2	-25.7%
Gibraltar	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	116.5%
Kazakhstan	87.4	66.7	51.3	66.9	67.8	71.7	76.6	80.3	78.7	82.6	86.6	-0.9%
Kosovo **	..	..	3.0	4.1	4.5	4.4	4.8	5.2	5.0	5.2	5.8	..
Kyrgyzstan	15.7	14.3	14.9	15.1	14.9	14.5	14.8	11.8	11.1	12.1	15.2	-3.6%
Latvia	6.6	4.0	4.1	4.7	4.9	4.9	4.8	5.3	5.6	6.6	6.1	-8.3%
Lithuania	28.4	13.5	11.1	18.8	14.4	12.1	13.5	13.3	14.6	5.0	4.2	-85.1%
FYR of Macedonia	5.8	6.1	6.8	6.7	6.9	7.0	6.5	6.3	6.8	7.3	6.9	19.4%
Malta	1.1	1.6	1.9	2.2	2.2	2.3	2.3	2.3	2.2	2.1	2.2	99.5%
Republic of Moldova	16.2	7.6	5.6	5.8	6.0	6.1	5.9	6.0	6.2	6.1	5.8	-64.3%
Montenegro **	..	..	..	..	2.9	3.0	2.1	2.8	2.8	4.0	2.7	..
Romania	64.3	59.3	51.9	56.5	59.4	62.7	61.7	65.0	57.7	60.6	62.0	-3.6%
Russian Federation	1 082.2	859.0	876.5	929.9	951.2	993.9	1 013.4	1 038.4	990.0	1 036.1	1 053.0	-2.7%
Serbia **	40.9	34.5	34.1	37.7	36.5	36.5	36.6	36.8	37.7	37.4	38.0	-7.1%
Tajikistan	18.1	14.8	14.2	16.5	17.1	16.9	17.5	16.1	16.1	16.4	16.2	-10.6%
Turkmenistan	14.6	9.8	9.8	11.9	12.8	13.7	14.9	15.0	16.0	16.7	17.2	17.9%
Ukraine	298.6	193.8	171.3	182.0	185.9	193.2	196.1	192.6	173.6	188.6	194.9	-34.7%
Uzbekistan	56.3	47.5	46.9	50.0	49.2	50.9	49.0	49.4	50.0	51.7	52.4	-7.0%
Non-OECD Europe and Eurasia	1 893.8	1 450.2	1 431.7	1 552.1	1 582.9	1 644.7	1 663.0	1 698.3	1 618.9	1 699.0	1 724.6	-8.9%
Algeria	16.1	19.7	25.4	31.3	33.9	35.2	37.2	40.2	38.5	45.7	51.2	218.1%
Angola	0.8	1.0	1.4	2.2	2.8	3.3	3.2	4.2	4.7	5.4	5.7	571.9%
Benin	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.2	633.3%
Botswana	0.9	1.0	0.9	0.8	0.9	0.9	0.7	0.6	0.6	0.5	0.4	-58.9%
Cameroon	2.7	2.8	3.5	4.1	4.0	5.1	5.2	5.7	5.8	5.9	6.0	122.3%
Congo	0.5	0.4	0.3	0.4	0.4	0.5	0.4	0.5	0.5	0.8	1.3	162.3%
Dem. Rep. of Congo	5.7	6.2	6.0	7.1	7.4	7.5	7.9	7.5	7.8	7.9	7.9	39.5%
Côte d'Ivoire	2.0	2.9	4.8	5.5	5.7	5.7	5.6	5.8	5.9	6.0	6.1	207.6%
Egypt	42.3	52.0	78.1	101.3	108.7	115.4	125.1	131.0	139.0	146.8	156.6	270.6%
Eritrea	..	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	..
Ethiopia	1.2	1.5	1.7	2.5	2.8	3.3	3.5	3.8	4.0	5.0	5.2	329.4%
Gabon	1.0	1.1	1.3	1.5	1.6	1.7	1.7	1.8	1.9	1.9	1.8	80.9%
Ghana	5.7	6.1	7.2	6.0	6.8	8.4	7.0	8.3	9.0	10.2	11.2	95.8%
Kenya	3.2	4.1	4.2	5.6	6.0	6.5	6.7	6.8	6.9	7.5	7.8	142.6%
Libya	10.2	11.4	15.5	20.3	22.7	24.8	26.2	30.7	31.0	32.8	27.6	171.6%
Morocco	9.6	12.1	12.9	17.7	19.3	19.9	19.9	20.6	21.1	23.5	24.9	158.3%
Mozambique	0.5	0.4	9.7	11.7	13.3	14.7	16.1	15.1	17.0	16.7	16.8	+
Namibia	..	1.2	1.3	1.6	1.6	1.5	1.7	1.6	1.5	1.3	1.4	..
Nigeria	13.5	15.9	14.7	24.3	23.5	23.1	23.0	21.1	19.8	26.1	27.0	100.8%
Senegal	0.9	1.1	1.6	2.3	2.5	2.4	2.7	2.4	2.9	3.1	3.0	218.9%
South Africa	165.4	185.4	207.8	240.9	242.1	250.9	260.5	255.5	246.8	256.6	259.6	57.0%
Sudan	1.5	1.9	2.6	3.5	3.8	4.5	5.0	5.5	6.5	7.7	8.6	467.7%
United Rep. of Tanzania	1.6	1.9	2.5	2.5	3.6	3.4	4.1	4.4	4.5	5.1	5.3	225.7%
Togo	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	-12.0%
Tunisia	5.8	7.7	10.6	11.9	12.7	13.1	13.7	14.4	15.3	16.1	16.1	177.6%
Zambia	8.0	7.9	7.8	8.5	8.9	9.9	9.8	9.7	10.4	11.3	11.5	42.9%
Zimbabwe	9.4	7.8	7.0	9.7	10.3	8.2	7.8	7.8	7.4	8.2	8.9	-4.7%
Other Africa	7.4	8.9	12.0	14.5	15.1	15.3	16.3	17.2	17.8	18.4	19.3	161.1%
Africa	316.0	362.9	441.4	538.3	560.8	585.7	611.9	622.8	627.0	670.9	691.8	118.9%

* Please refer to Part I, Chapter 4, Geographical Coverage.

** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

Electricity output

terawatt hours

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	% change 90-11
Bangladesh	7.7	10.8	15.8	24.7	26.4	29.5	31.0	34.3	37.2	41.7	44.1	469.9%
Brunei Darussalam	1.2	2.0	2.5	3.3	3.3	3.3	3.4	3.4	3.6	3.8	3.7	217.8%
Cambodia	..	0.2	0.4	0.8	1.0	1.2	1.5	1.5	1.3	1.0	1.1	..
Chinese Taipei	88.4	129.1	180.6	215.1	223.5	231.6	239.2	234.8	226.4	243.9	249.1	181.8%
India	289.4	417.6	561.2	666.6	698.2	753.3	813.9	841.7	906.8	959.9	1 052.3	263.6%
Indonesia	32.7	59.2	93.3	120.2	127.4	133.1	142.2	149.4	155.6	168.7	182.4	458.3%
DPR of Korea	27.7	23.0	19.4	22.0	22.9	22.4	21.5	23.2	21.1	21.7	21.6	-21.9%
Malaysia	23.0	45.5	69.3	82.3	82.7	89.8	97.5	97.8	116.3	125.1	130.1	465.2%
Mongolia	3.5	2.7	3.0	3.4	3.5	3.6	3.8	4.1	4.2	4.5	4.8	36.9%
Myanmar	2.5	4.1	5.1	5.6	6.0	6.2	6.4	6.6	7.0	7.5	7.3	195.7%
Nepal	0.9	1.2	1.7	2.4	2.5	2.7	2.8	2.8	3.1	3.2	3.3	277.2%
Pakistan	37.7	57.0	68.1	85.7	93.8	98.4	95.7	91.6	95.4	94.5	95.3	152.9%
Philippines	26.3	33.6	45.3	56.0	56.6	56.8	59.6	60.8	61.9	67.7	69.2	162.8%
Singapore	15.7	22.2	31.7	36.8	38.2	39.4	41.1	41.7	41.8	45.4	46.0	192.7%
Sri Lanka	3.2	4.8	7.0	8.2	9.3	9.5	9.9	9.2	10.0	10.8	11.6	269.7%
Thailand	44.2	80.1	96.0	125.7	132.2	138.7	143.4	147.4	148.4	159.5	156.0	253.1%
Vietnam	8.7	14.6	26.6	46.2	53.7	60.5	67.0	73.4	83.2	94.9	99.2	+
Other Asia	8.4	9.0	13.8	16.3	16.7	18.4	20.3	20.6	20.8	20.9	22.4	165.4%
Asia	621.1	916.5	1 240.7	1 521.2	1 598.0	1 698.5	1 800.3	1 844.6	1 944.1	2 074.7	2 199.4	254.1%
People's Rep. of China	621.2	1 007.8	1 356.2	2 204.7	2 502.5	2 869.8	3 287.5	3 482.0	3 742.0	4 208.1	4 715.7	659.1%
Hong Kong, China	28.9	27.9	31.3	37.1	38.5	38.6	39.0	38.0	38.7	38.3	39.0	34.9%
China	650.1	1 035.7	1 387.6	2 241.9	2 540.9	2 908.4	3 326.5	3 520.0	3 780.8	4 246.4	4 754.7	631.3%
Argentina	50.7	67.0	88.9	100.2	105.5	96.4	102.5	121.6	121.9	125.3	129.6	155.3%
Bolivia	2.3	3.0	3.9	4.5	4.9	5.3	5.7	5.8	6.1	6.8	7.2	212.5%
Brazil	222.8	275.6	348.9	387.5	403.0	419.3	445.1	463.1	466.2	515.8	531.8	138.6%
Colombia	36.4	42.7	43.1	49.7	50.3	53.8	55.2	56.0	57.2	56.8	61.8	70.0%
Costa Rica	3.5	4.9	6.9	8.2	8.3	8.7	9.1	9.5	9.3	9.6	9.8	183.5%
Cuba	15.0	12.5	15.0	15.6	15.3	16.5	17.6	17.7	17.7	17.4	17.8	18.2%
Dominican Republic	3.7	5.5	8.5	10.8	10.1	11.1	11.5	11.9	11.6	12.5	13.0	250.9%
Ecuador	6.3	8.4	10.6	12.9	12.6	13.9	16.2	18.6	18.4	19.3	20.3	219.2%
El Salvador	2.2	3.3	3.4	4.5	4.8	5.7	5.8	6.0	5.8	6.0	5.8	161.7%
Guatemala	2.2	3.5	6.0	7.5	7.8	8.2	8.8	8.7	9.0	8.8	8.1	272.6%
Haiti	0.6	0.5	0.5	0.5	0.6	0.6	0.5	0.5	0.7	0.6	0.7	20.3%
Honduras	2.3	2.7	3.7	4.9	5.6	6.0	6.3	6.5	6.6	6.7	7.1	207.3%
Jamaica	2.5	5.8	6.6	7.2	7.4	7.5	6.0	6.0	5.5	4.2	5.1	109.2%
Netherlands Antilles	0.8	1.0	1.1	1.2	1.2	1.2	1.3	1.2	1.3	1.3	1.3	65.2%
Nicaragua	1.5	1.9	2.4	2.9	3.1	3.1	3.2	3.4	3.5	3.7	3.8	162.5%
Panama	2.7	3.5	4.9	5.8	5.8	6.0	6.5	6.4	7.0	7.4	7.9	195.3%
Paraguay	27.2	42.2	53.5	51.9	51.2	53.8	53.7	55.5	55.0	54.1	57.6	112.0%
Peru	13.8	16.1	19.9	24.3	25.5	27.4	29.9	32.4	32.9	35.9	39.2	184.1%
Trinidad and Tobago	3.6	4.3	5.5	6.4	7.1	6.9	7.7	7.7	7.7	8.5	8.9	147.9%
Uruguay	7.4	6.3	7.6	5.9	7.7	5.6	9.4	8.8	8.9	11.0	10.3	39.0%
Venezuela	59.3	73.4	85.3	98.6	105.5	112.4	114.6	119.3	119.6	118.4	122.1	105.8%
Other Non-OECD Americas	22.2	27.8	32.5	36.6	37.7	38.2	38.4	37.1	37.1	37.8	38.6	73.7%
Non-OECD Americas	489.0	612.1	758.8	847.6	880.9	907.4	954.9	1 003.6	1 009.0	1 067.6	1 107.8	126.5%
Bahrain	3.5	4.6	6.3	8.4	8.9	9.7	10.9	11.9	12.1	13.2	13.8	297.1%
Islamic Republic of Iran	59.1	85.0	121.4	166.9	178.1	192.7	204.0	214.5	221.4	233.0	239.7	305.6%
Iraq	24.0	29.7	31.9	32.3	30.4	33.8	33.2	36.8	45.6	50.2	54.2	126.0%
Jordan	3.6	5.6	7.4	9.0	9.7	11.1	13.0	13.8	14.3	14.8	14.6	302.6%
Kuwait	18.5	23.7	32.3	41.3	43.7	47.6	48.8	51.7	53.2	57.0	57.5	211.0%
Lebanon	1.5	5.3	9.8	12.5	12.4	11.6	12.1	13.4	13.8	15.7	16.4	991.0%
Oman	4.5	6.5	9.1	11.5	12.6	13.3	14.2	15.8	17.8	19.8	21.9	386.0%
Qatar	4.8	6.0	9.1	13.2	14.4	17.1	19.5	21.6	24.2	28.1	30.7	537.8%
Saudi Arabia	69.2	97.8	126.2	159.9	176.1	181.4	190.5	204.2	217.1	240.1	250.1	261.3%
Syrian Arab Republic	11.6	16.6	25.2	32.1	34.9	37.3	38.6	41.0	43.3	46.4	41.1	253.8%
United Arab Emirates	17.1	25.0	39.9	52.4	60.7	66.8	76.1	86.3	90.6	97.7	99.1	480.4%
Yemen	1.7	2.4	3.4	4.4	4.8	5.4	6.0	6.5	6.7	7.8	6.2	273.2%
Middle East	219.1	308.3	422.0	543.8	586.7	627.8	666.9	717.7	760.0	823.8	845.3	285.9%

CO₂ emissions per kWh from electricity generation *grammes CO₂ / kilowatt hour

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	average 09-11
World	524	526	528	539	542	543	546	539	533	529	536	533
<i>Annex I Parties</i>	493	472	466	460	461	454	460	447	426	426	429	427
<i>Annex II Parties</i>	483	469	466	462	459	448	456	441	420	420	418	419
<i>North America</i>	531	534	544	531	526	507	512	499	472	481	460	471
<i>Europe</i>	408	367	335	335	330	333	335	315	299	290	290	293
<i>Asia Oceania</i>	482	461	468	499	504	495	521	512	500	486	547	511
<i>Annex I EIT</i>	527	484	464	454	474	484	480	472	449	454	480	461
<i>Non-Annex I Parties</i>	625	658	655	669	668	673	663	658	660	647	648	651
<i>Annex I Kyoto Parties</i>	442	398	382	386	388	391	396	382	365	362	379	369
Non-OECD Total	573	604	611	636	643	652	643	640	639	627	633	633
OECD Total	496	482	478	470	467	457	465	451	434	434	434	434
Canada	196	176	216	209	194	190	190	190	167	179	167	171
Chile	457	267	349	322	318	304	408	411	373	410	441	408
Mexico	549	539	559	495	509	482	479	431	455	457	450	454
United States	582	590	593	577	574	552	560	545	517	522	503	514
OECD Americas	532	532	543	527	523	503	509	495	470	479	459	469
Australia	817	810	853	880	900	899	887	887	911	844	823	859
Israel	827	820	765	809	776	774	770	713	694	687	727	703
Japan	435	412	402	429	431	420	454	440	416	418	497	444
Korea	520	554	529	503	487	491	481	487	525	534	545	535
New Zealand	109	89	165	196	237	231	196	215	168	151	141	153
OECD Asia Oceania	492	481	487	508	507	502	519	512	512	504	552	523
Austria	238	206	170	224	218	217	204	187	163	193	215	190
Belgium	347	361	291	285	275	263	254	254	218	220	196	211
Czech Republic	744	794	728	617	614	606	636	621	588	589	591	589
Denmark	669	588	450	404	370	459	426	399	399	359	315	358
Estonia	932	1 062	1 063	1 029	1 048	965	1 048	1 084	1 078	1 014	1 086	1 059
Finland	188	223	173	258	164	265	238	177	190	230	191	203
France	105	73	75	67	79	72	76	72	74	77	61	71
Germany	607	581	526	504	487	485	511	481	473	461	477	470
Greece	990	946	820	780	779	731	752	748	725	718	720	721
Hungary	496	512	469	448	372	373	368	351	313	317	317	316
Iceland	1	1	0	0	0	0	1	1	0	0	0	0
Ireland	740	727	642	575	584	537	510	471	452	458	427	445
Italy	575	545	498	497	486	479	475	452	411	406	402	406
Luxembourg	2 552	1 738	528	393	389	387	381	385	376	379	387	381
Netherlands	607	546	477	467	454	452	455	442	420	415	404	413
Norway	1	2	1	3	2	3	4	3	11	16	13	14
Poland	988	905	866	833	818	821	820	815	799	781	780	787
Portugal	519	576	486	465	521	431	396	394	379	255	303	313
Slovak Republic	389	364	245	233	221	214	221	208	210	197	200	202
Slovenia	429	382	343	345	349	362	375	332	318	325	338	327
Spain	427	454	432	383	396	369	387	327	297	237	291	275
Sweden	12	22	22	23	19	23	17	18	19	26	17	21
Switzerland	24	23	25	28	32	33	30	29	26	27	30	28
Turkey	568	512	529	426	438	452	494	511	496	460	472	476
United Kingdom	672	529	472	492	491	515	506	499	453	457	441	450
OECD Europe	448	407	376	370	365	368	374	356	340	331	334	335
<i>European Union - 27</i>	488	440	401	391	387	389	396	375	357	347	352	352

* CO₂ emissions from fossil fuels consumed for electricity generation, in both electricity-only and combined heat and power plants, divided by output of electricity generated from all fossil and non-fossil sources. Both main activity producers and autoproducers have been included in the calculation.

CO₂ emissions per kWh from electricity generationgrammes CO₂ / kilowatt hour

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	average 09-11
Non-OECD Total	573	604	611	636	643	652	643	640	639	627	633	633
Albania	162	38	43	30	26	26	31	-	1	2	7	3
Armenia	495	211	238	114	131	130	157	159	102	92	123	106
Azerbaijan	574	696	739	535	536	519	549	518	481	431	455	456
Belarus	548	500	472	463	459	461	452	465	466	449	441	452
Bosnia and Herzegovina	713	176	824	772	797	852	1 007	830	805	723	974	834
Bulgaria	761	582	478	538	506	493	597	566	540	542	591	558
Croatia	382	263	313	312	330	337	422	367	290	236	334	287
Cyprus *	838	822	838	772	788	758	761	759	746	705	732	728
Georgia	574	510	225	89	101	147	161	79	123	69	102	98
Gibraltar	737	766	760	743	761	751	751	757	757	762	752	757
Kazakhstan	611	621	730	597	597	866	683	566	441	409	431	427
Kosovo **	..	..	1 316	1 297	1 121	1 126	1 089	1 088	1 286	1 287	1 109	1 227
Kyrgyzstan	165	99	78	73	64	66	65	84	50	56	45	51
Latvia	115	134	135	97	88	113	106	114	96	120	133	116
Lithuania	158	65	99	68	101	100	88	83	84	338	270	230
FYR of Macedonia	917	879	799	798	791	783	870	904	798	684	811	764
Malta	1 587	957	819	913	1 034	954	1 012	849	850	871	862	861
Republic of Moldova	723	712	642	494	493	483	491	487	500	493	486	493
Montenegro **	..	..	..	..	384	429	455	530	290	420	653	454
Romania	855	741	579	528	493	521	542	512	472	412	499	461
Russian Federation	406	363	394	402	436	445	428	426	402	412	437	417
Serbia **	892	1 001	886	884	764	817	734	733	740	711	784	745
Tajikistan	68	25	26	22	21	21	20	20	17	14	12	15
Turkmenistan	686	931	872	872	872	872	872	927	865	954	983	934
Ukraine	654	566	400	360	397	430	440	432	411	416	450	426
Uzbekistan	624	572	629	588	588	582	609	543	566	550	559	558
Non-OECD Europe and Eurasia	500	449	441	430	451	476	463	452	426	427	459	437
Algeria	631	633	620	632	606	621	597	596	638	546	556	580
Angola	343	177	499	290	273	260	300	330	465	430	390	429
Benin	1 200	951	601	740	709	698	662	679	719	720	722	720
Botswana	1 791	1 800	1 876	2 190	2 073	1 927	1 587	1 789	1 787	1 790	1 787	1 788
Cameroon	13	10	10	28	40	83	162	161	196	207	200	201
Congo	6	9	-	97	103	102	130	100	245	267	230	247
Dem. Rep. of Congo	4	4	1	1	1	2	3	4	3	3	3	3
Côte d'Ivoire	205	275	379	356	457	385	409	449	391	461	437	430
Egypt	521	443	343	489	474	473	450	460	466	450	457	458
Eritrea	..	1 703	1 333	1 003	975	962	941	802	833	850	849	844
Ethiopia	136	42	11	6	3	3	44	119	122	7	7	45
Gabon	270	255	326	327	382	348	424	350	356	383	378	373
Ghana	-	3	66	84	147	276	360	215	188	295	215	233
Kenya	51	63	455	217	247	259	249	322	397	274	294	322
Libya	779	1 131	1 022	851	902	883	779	692	705	680	636	674
Morocco	783	928	831	860	830	819	802	787	698	687	729	705
Mozambique	241	64	5	3	1	1	1	0	1	1	1	1
Namibia	..	37	5	1	29	95	98	148	71	59	24	51
Nigeria	420	371	338	362	359	385	385	386	416	405	433	418
Senegal	889	881	940	674	741	751	635	617	683	665	689	679
South Africa	849	884	893	871	851	831	827	948	906	927	869	901
Sudan	325	465	508	607	615	658	580	601	413	165	204	261
United Rep. of Tanzania	152	284	192	141	349	415	232	218	253	269	288	270
Togo	422	185	558	439	350	456	401	206	200	216	206	207
Tunisia	651	588	574	477	469	492	506	494	472	463	455	463
Zambia	11	7	7	6	6	5	3	3	2	2	3	3
Zimbabwe	714	920	740	572	572	461	422	328	357	358	358	358
Other Africa	374	323	443	460	487	528	518	518	516	527	527	523
Africa	670	690	651	649	636	627	612	655	630	620	596	616

* Please refer to Part I, Chapter 4, Geographical Coverage.

** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

CO₂ emissions per kWh from electricity generationgrammes CO₂ / kilowatt hour

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	average 09-11
Bangladesh	554	601	556	546	553	578	593	585	597	604	564	588
Brunei Darussalam	924	880	795	820	800	839	739	791	789	730	717	745
Cambodia	..	805	834	806	793	797	805	820	816	804	793	804
Chinese Taipei	463	533	625	644	649	657	653	648	635	624	601	620
India	812	901	920	931	920	906	916	934	942	913	856	904
Indonesia	679	592	654	708	719	736	768	747	752	716	755	741
DPR of Korea	566	481	584	528	522	533	469	481	498	465	475	480
Malaysia	677	543	495	561	618	598	611	653	597	724	688	669
Mongolia	693	1 273	1 097	872	887	841	953	851	857	947	837	880
Myanmar	510	508	457	436	395	374	357	308	199	262	255	239
Nepal	-	26	12	6	7	5	4	4	4	1	1	2
Pakistan	408	405	479	397	380	413	433	451	458	425	409	431
Philippines	341	463	493	448	491	429	443	483	475	481	492	483
Singapore	908	933	762	561	534	524	521	507	487	498	500	495
Sri Lanka	2	51	448	513	476	335	394	420	429	379	469	426
Thailand	626	605	567	543	535	511	546	529	513	513	522	516
Vietnam	552	301	427	438	447	435	426	406	384	432	429	415
Other Asia	348	264	253	406	411	357	327	311	316	315	315	315
Asia	664	704	729	725	723	717	730	740	740	730	707	725
People's Rep. of China	897	904	889	882	869	863	823	797	790	758	764	771
Hong Kong, China	828	855	712	749	755	754	775	757	763	723	768	751
China	894	903	885	879	867	862	822	797	790	758	764	771
Argentina	394	273	338	308	313	370	395	369	366	366	390	374
Bolivia	307	400	314	295	329	326	334	375	393	430	433	419
Brazil	55	55	88	85	84	81	73	90	64	86	68	73
Colombia	208	205	160	117	131	127	127	107	176	176	108	153
Costa Rica	20	155	8	8	28	55	72	63	40	56	64	53
Cuba	765	858	690	820	832	767	750	733	1 063	1 014	955	1 011
Dominican Republic	868	895	782	777	810	832	820	816	757	754	743	751
Ecuador	187	314	215	283	378	430	366	279	329	376	345	350
El Salvador	67	391	324	312	302	310	316	270	273	220	243	246
Guatemala	74	296	392	323	299	345	369	343	349	286	286	307
Haiti	408	327	346	301	307	305	372	351	399	393	382	391
Honduras	10	327	281	451	411	267	420	409	346	332	371	350
Jamaica	757	888	824	618	572	484	611	626	568	746	620	645
Netherlands Antilles	717	714	714	713	711	710	708	707	707	707	708	707
Nicaragua	345	473	591	536	481	522	533	480	506	460	471	479
Panama	170	317	231	266	275	310	317	273	302	301	357	320
Paraguay	0	2	-	-	-	-	-	-	-	-	-	-
Peru	184	186	154	212	209	183	199	240	253	290	297	280
Trinidad and Tobago	708	711	685	751	759	753	753	704	719	699	506	641
Uruguay	43	53	57	151	103	296	104	307	253	80	197	177
Venezuela	323	219	191	222	208	222	208	203	207	258	234	233
Other Non-OECD Americas	223	216	213	233	227	225	236	253	253	252	284	263
Non-OECD Americas	184	167	174	179	179	183	181	187	185	196	184	188
Bahrain	1 061	815	868	881	873	824	837	651	665	640	601	635
Islamic Republic of Iran	603	606	574	542	541	549	546	582	578	565	578	573
Iraq	569	1 678	641	579	573	387	423	672	932	1 003	903	946
Jordan	815	834	708	682	660	626	588	594	584	575	637	599
Kuwait	887	578	780	727	799	786	782	778	870	758	787	805
Lebanon	1 835	678	737	599	591	706	662	715	717	709	707	711
Oman	762	830	795	885	861	885	874	826	791	755	741	763
Qatar	1 077	1 131	771	649	618	617	565	534	507	493	490	497
Saudi Arabia	831	813	805	754	739	749	726	736	757	737	754	749
Syrian Arab Republic	553	586	567	571	607	612	623	627	629	594	602	608
United Arab Emirates	743	737	728	913	844	820	720	729	632	600	600	611
Yemen	746	946	930	874	841	781	679	636	630	655	633	640
Middle East	737	809	701	679	676	668	650	673	687	668	674	677

CO₂ emissions per kWh from electricity generation using coal/peat *

 grammes CO₂ / kilowatt hour

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	average 09-11
World	983	996	978	996	992	991	981	976	977	967	959	968
<i>Annex I Parties</i>	954	946	920	932	929	930	938	922	923	924	932	927
<i>Annex II Parties</i>	927	942	921	929	918	916	927	914	917	915	918	917
<i>North America</i>	913	947	921	926	915	906	921	904	905	907	909	907
<i>Europe</i>	927	916	897	909	900	912	921	914	906	899	912	905
<i>Asia Oceania</i>	1 021	973	964	973	963	969	966	961	981	969	967	972
<i>Annex I EIT</i>	1 088	960	901	948	1 009	1 011	1 002	956	949	968	995	970
<i>Non-Annex I Parties</i>	1 075	1 109	1 084	1 079	1 066	1 058	1 022	1 025	1 020	999	977	998
<i>Annex I Kyoto Parties</i>	994	941	915	938	944	951	949	935	938	940	953	944
Non-OECD Total	1 085	1 084	1 064	1 077	1 075	1 065	1 031	1 028	1 022	1 002	979	1 001
OECD Total	939	949	926	931	920	920	927	916	920	920	928	923
Canada	960	943	907	931	866	853	806	828	861	903	917	894
Chile	1 033	890	1 005	850	923	866	875	958	873	887	947	902
Mexico	921	1 110	1 046	992	974	963	959	1 003	971	972	974	972
United States	911	948	922	926	917	909	927	908	907	907	909	908
OECD Americas	914	948	922	927	916	907	921	905	906	908	911	908
Australia	946	933	964	1 049	1 047	1 048	1 046	1 047	1 087	1 042	1 039	1 056
Israel	882	847	851	830	797	834	836	837	832	838	847	839
Japan	1 100	1 007	961	925	911	917	916	906	909	923	920	917
Korea	2 017	1 250	1 010	1 007	990	999	913	908	940	962	1 009	971
New Zealand	901	793	1 319	1 094	1 045	1 076	1 154	1 052	1 125	1 294	1 260	1 226
OECD Asia Oceania	1 081	1 003	967	974	962	970	948	942	962	961	975	966
Austria	951	1 061	894	982	997	1 010	1 066	1 011	1 051	1 060	1 039	1 050
Belgium	1 002	1 038	992	1 136	1 180	1 259	1 303	1 438	1 131	1 230	1 294	1 218
Czech Republic	960	1 061	941	957	944	953	973	987	975	994	1 019	996
Denmark	705	658	614	656	637	693	688	668	657	641	635	644
Estonia	1 013	1 079	1 128	1 071	1 105	1 021	1 081	1 141	1 162	1 124	1 217	1 168
Finland	636	666	707	774	721	761	741	736	685	722	721	709
France	1 053	1 111	1 018	976	966	1 003	1 012	1 036	964	919	919	934
Germany	932	936	879	900	867	904	907	896	906	889	905	900
Greece	1 137	1 126	992	1 015	1 009	1 019	991	1 009	1 000	1 025	1 044	1 023
Hungary	1 168	1 066	1 037	1 154	1 099	1 046	1 049	1 060	1 075	1 101	1 066	1 080
Iceland	-	-	-	-	-	-	-	-	-	-	-	-
Ireland	917	923	898	881	874	844	857	812	833	869	819	840
Italy	963	987	974	975	998	990	1 008	1 019	963	968	954	961
Luxembourg	3 170	3 701	-	-	-	-	-	-	-	-	-	-
Netherlands	884	864	842	861	857	821	839	842	810	830	830	823
Norway	1 411	863	1 041	1 025	1 060	1 057	1 065	1 118	1 156	1 153	1 170	1 160
Poland	1 005	916	882	858	858	863	866	873	870	865	875	870
Portugal	886	854	865	843	857	859	849	848	853	873	870	865
Slovak Republic	954	1 031	947	974	982	1 000	1 012	991	1 012	1 001	1 007	1 007
Slovenia	1 252	993	985	986	971	978	993	984	964	953	970	962
Spain	936	911	917	891	886	901	943	901	927	938	961	942
Sweden	637	525	866	820	988	902	827	690	780	678	608	689
Switzerland	665	-	-	-	-	-	-	-	-	-	-	-
Turkey	1 199	1 132	1 085	1 045	918	1 017	1 039	1 038	1 023	1 059	1 037	1 039
United Kingdom	910	880	927	936	941	933	938	931	931	924	922	925
OECD Europe	950	934	910	915	903	916	927	925	917	916	928	920
<i>European Union - 27</i>	953	939	908	917	910	919	929	926	918	914	929	920

* CO₂ emissions from coal and peat consumed for electricity generation, in both electricity-only and combined heat and power (CHP) plants, divided by output of electricity generated from coal/peat. Both main activity producers and autoproducers have been included in the calculation. This indicator is set as not available when the electricity output is very small or when values do not fall within expected ranges due to data quality.

CO₂ emissions per kWh from electricity generation using coal/peatgrammes CO₂ / kilowatt hour

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	average 09-11
Non-OECD Total	1 085	1 084	1 064	1 077	1 075	1 065	1 031	1 028	1 022	1 002	979	1 001
Albania	-	-	-	-	-	-	-	-	-	-	-	-
Armenia	-	-	-	-	-	-	-	-	-	-	-	-
Azerbaijan	-	-	-	-	-	-	-	-	-	-	-	-
Belarus	-	-	-	1 433	1 484	1 884	1 260	1 886	1 386	1 070	1 440	1 299
Bosnia and Herzegovina	896	977	1 615	1 463	1 532	1 532	1 535	1 236	1 345	1 368	1 372	1 361
Bulgaria	1 237	1 138	1 033	1 111	1 142	1 119	1 080	1 043	1 045	1 068	1 047	1 053
Croatia	971	1 043	894	913	896	863	862	858	882	866	840	863
Cyprus *	-	-	-	-	-	-	-	-	-	-	-	-
Georgia	-	-	-	-	-	-	-	-	-	-	-	-
Gibraltar	-	-	-	-	-	-	-	-	-	-	-	-
Kazakhstan	632	694	828	684	648	1 046	766	616	457	436	460	451
Kosovo **	..	..	1 341	1 336	1 151	1 154	1 112	1 106	1 319	1 330	1 127	1 259
Kyrgyzstan	576	678	814	866	593	593	535	880	877	877	876	877
Latvia	855	1 241	1 504	-	-	-	..	..	..	..	..	..
Lithuania	-	-	-	-	-	945	1 013	1 113	-	-	-	-
FYR of Macedonia	964	1 010	972	1 025	1 007	1 036	1 054	1 050	990	1 033	1 037	1 020
Malta	1 167	1 382	-	-	-	-	-	-	-	-	-	-
Republic of Moldova	878	816	1 178	-	-	-	-	-	-	-	-	-
Montenegro **	..	..	..	..	1 102	1 052	1 135	1 162	1 160	1 328	1 195	1 228
Romania	1 045	1 242	1 032	1 068	1 066	1 053	1 098	1 089	1 089	1 063	1 105	1 086
Russian Federation	1 115	761	792	908	1 068	1 088	1 045	914	919	960	999	960
Serbia **	1 213	1 573	1 388	1 274	1 176	1 189	1 032	999	1 024	1 058	1 033	1 038
Tajikistan	-	-	-	-	-	-	-	-	-	-	-	-
Turkmenistan	-	-	-	-	-	-	-	-	-	-	-	-
Ukraine	1 183	1 257	1 070	1 119	1 203	1 115	1 121	1 065	1 008	1 037	1 075	1 040
Uzbekistan	1 817	1 582	1 566	1 565	1 567	1 565	1 566	1 565	1 565	1 566	1 566	1 566
Non-OECD Europe and Eurasia	1 065	957	927	971	1 043	1 100	1 030	934	907	920	947	925
Algeria	-	-	-	-	-	-	-	-	-	-	-	-
Angola	-	-	-	-	-	-	-	-	-	-	-	-
Benin	-	-	-	-	-	-	-	-	-	-	-	-
Botswana	1 885	1 815	1 900	2 268	2 081	1 933	1 591	1 789	1 787	1 790	1 787	1 788
Cameroon	-	-	-	-	-	-	-	-	-	-	-	-
Congo	-	-	-	-	-	-	-	-	-	-	-	-
Dem. Rep. of Congo	-	-	-	-	-	-	-	-	-	-	-	-
Côte d'Ivoire	-	-	-	-	-	-	-	-	-	-	-	-
Egypt	-	-	-	-	-	-	-	-	-	-	-	-
Eritrea	..	-	-	-	-	-	-	-	-	-	-	-
Ethiopia	-	-	-	-	-	-	-	-	-	-	-	-
Gabon	-	-	-	-	-	-	-	-	-	-	-	-
Ghana	-	-	-	-	-	-	-	-	-	-	-	-
Kenya	-	-	-	-	-	-	-	-	-	-	-	-
Libya	-	-	-	-	-	-	-	-	-	-	-	-
Morocco	1 242	1 020	938	945	951	971	971	967	961	989	983	978
Mozambique	883	-	-	-	-	-	-	-	-	-	-	-
Namibia	..	1 346	1 262	..	1 503	1 388	1 339	1 335	1 322	1 339	1 367	1 343
Nigeria	1 656	-	-	-	-	-	-	-	-	-	-	-
Senegal	-	-	-	-	-	-	-	-	-	-	-	-
South Africa	900	944	960	928	900	878	869	1 005	963	983	927	957
Sudan	-	-	-	-	-	-	-	-	-	-	-	-
United Rep. of Tanzania	-	1 116	1 107	1 113	1 108	1 096	1 130	1 076	-	1 080	1 076	1 078
Togo	-	-	-	-	-	-	-	-	-	-	-	-
Tunisia	-	-	-	-	-	-	-	-	-	-	-	-
Zambia	1 703	1 718	1 636	1 527	1 575	1 636	2 290	2 290	2 290	-	-	2 290
Zimbabwe	1 338	1 287	1 358	1 314	1 314	1 370	1 410	1 296	1 389	1 389	1 389	1 389
Other Africa	956	956	956	956	956	956	956	956	956	956	956	956
Africa	923	962	970	939	915	893	882	1 007	968	987	935	963

* Please refer to Part I, Chapter 4, Geographical Coverage.

** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

CO₂ emissions per kWh from electricity generation using coal/peatgrammes CO₂ / kilowatt hour

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	average 09-11
Bangladesh	-	-	-	-	1 362	1 392	1 390	884	924	1 328	1 062	1 105
Brunei Darussalam	-	-	-	-	-	-	-	-	-	-	-	-
Cambodia	..	-	-	-	-	-	-	-	1 070	1 027	1 046	1 048
Chinese Taipei	983	853	941	919	925	934	931	945	928	926	885	913
India	1 125	1 177	1 206	1 231	1 245	1 233	1 282	1 252	1 270	1 247	1 171	1 229
Indonesia	938	941	974	983	1 023	998	1 051	1 078	1 069	1 084	1 065	1 073
DPR of Korea	1 294	1 253	1 217	1 208	1 208	1 208	1 208	1 208	1 208	1 208	1 208	1 208
Malaysia	1 077	1 077	754	1 076	1 076	1 076	1 076	1 196	1 069	1 173	953	1 065
Mongolia	683	1 294	1 103	869	883	835	951	844	851	943	827	874
Myanmar	1 196	-	-	1 034	1 036	1 035	1 035	1 032	1 032	1 034	1 239	1 101
Nepal	-	-	-	-	-	-	-	-	-	-	-	-
Pakistan	1 836	1 581	1 491	2 165	2 434	2 694	2 705	2 189	2 452	2 457	2 459	2 456
Philippines	1 020	1 436	960	897	1 138	1 021	989	1 221	1 138	920	953	1 004
Singapore	-	-	-	-	-	-	-	-	-	-	-	-
Sri Lanka	-	-	-	-	-	-	-	-	-	-	1 034	1 034
Thailand	957	984	965	989	974	800	975	938	923	932	1 012	956
Vietnam	1 790	1 415	1 479	1 402	988	988	988	987	987	988	988	988
Other Asia	-	-	980	981	983	981	982	981	980	980	980	980
Asia	1 101	1 123	1 131	1 141	1 154	1 138	1 178	1 175	1 181	1 166	1 103	1 150
People's Rep. of China	1 164	1 161	1 093	1 093	1 073	1 053	999	997	991	962	950	968
Hong Kong, China	832	856	869	881	881	888	891	898	888	885	893	889
China	1 144	1 151	1 089	1 090	1 070	1 051	998	997	990	962	949	967
Argentina	3 655	2 026	1 246	1 420	1 372	1 298	1 231	1 452	1 418	1 278	1 218	1 305
Bolivia	-	-	-	-	-	-	-	-	-	-	-	-
Brazil	1 691	1 565	1 507	1 450	1 505	1 617	1 571	1 407	1 456	1 549	1 165	1 390
Colombia	1 170	1 155	1 101	1 137	1 150	1 068	952	1 055	1 109	1 105	1 119	1 111
Costa Rica	-	-	-	-	-	-	-	-	-	-	-	-
Cuba	-	-	-	-	-	-	-	-	-	-	-	-
Dominican Republic	946	952	955	954	954	953	954	953	954	953	953	953
Ecuador	-	-	-	-	-	-	-	-	-	-	-	-
El Salvador	-	-	-	-	-	-	-	-	-	-	-	-
Guatemala	-	-	954	954	953	953	953	954	954	953	954	954
Haiti	-	-	-	-	-	-	-	-	-	-	-	-
Honduras	-	-	-	-	-	-	-	-	-	-	930	930
Jamaica	-	-	-	-	-	-	-	-	-	-	-	-
Netherlands Antilles	-	-	-	-	-	-	-	-	-	-	-	-
Nicaragua	-	-	-	-	-	-	-	-	-	-	-	-
Panama	-	-	-	-	-	-	-	-	-	-	1 112	1 112
Paraguay	-	-	-	-	-	-	-	-	-	-	-	-
Peru	-	-	1 112	1 112	1 112	1 112	1 113	1 112	1 279	1 255	1 284	1 272
Trinidad and Tobago	-	-	-	-	-	-	-	-	-	-	-	-
Uruguay	-	-	-	-	-	-	-	-	-	-	-	-
Venezuela	-	-	-	-	-	-	-	-	-	-	-	-
Other Non-OECD Americas	-	-	-	-	-	-	-	-	-	-	-	-
Non-OECD Americas	1 617	1 480	1 388	1 313	1 358	1 379	1 310	1 281	1 301	1 342	1 139	1 261
Bahrain	-	-	-	-	-	-	-	-	-	-	-	-
Islamic Republic of Iran	601	605	..	..	..	..	..	..	..	..	..	..
Iraq	-	-	-	-	-	-	-	-	-	-	-	-
Jordan	-	-	-	-	-	-	-	-	-	-	-	-
Kuwait	-	-	-	-	-	-	-	-	-	-	-	-
Lebanon	-	-	-	-	-	-	-	-	-	-	-	-
Oman	-	-	-	-	-	-	-	-	-	-	-	-
Qatar	-	-	-	-	-	-	-	-	-	-	-	-
Saudi Arabia	-	-	-	-	-	-	-	-	-	-	-	-
Syrian Arab Republic	-	-	-	-	-	-	-	-	-	-	-	-
United Arab Emirates	-	-	-	-	-	-	-	-	-	-	-	-
Yemen	-	-	-	-	-	-	-	-	-	-	-	-
Middle East	601	605	..	..	..	..	..	..	..	..	..	..

CO₂ emissions per kWh from electricity generation using oil *grammes CO₂ / kilowatt hour

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	average 09-11
World	727	733	740	745	759	752	741	750	779	780	781	780
<i>Annex I Parties</i>	675	629	694	698	707	688	686	680	664	668	665	666
<i>Annex II Parties</i>	658	636	688	692	702	683	680	673	653	658	647	653
<i>North America</i>	678	570	797	773	761	809	769	757	712	748	734	731
<i>Europe</i>	674	656	644	659	720	671	722	722	708	716	711	712
<i>Asia Oceania</i>	634	655	636	622	620	603	609	598	567	565	598	576
<i>Annex I EIT</i>	716	586	708	730	715	686	697	700	694	723	774	731
<i>Non-Annex I Parties</i>	811	842	773	777	794	786	770	782	823	818	827	823
<i>Annex I Kyoto Parties</i>	673	640	650	656	678	658	668	669	652	653	659	655
Non-OECD Total	785	814	782	794	807	795	785	801	838	832	837	836
OECD Total	674	662	696	690	705	687	680	666	659	668	665	664
Canada	721	641	627	685	705	998	965	1 006	770	981	978	910
Chile	849	1 550	938	1 110	1 088	1 073	686	618	651	672	756	693
Mexico	781	770	780	744	780	754	761	731	758	755	758	757
United States	671	559	819	787	767	786	744	719	700	711	694	702
OECD Americas	710	657	791	768	771	793	758	730	723	745	747	738
Australia	832	898	912	1 873	947	936	962	979	702	576	618	632
Israel	772	777	578	888	848	866	844	705	797	840	1 129	922
Japan	631	652	632	608	613	595	602	587	560	564	597	574
Korea	765	714	560	529	589	610	570	544	569	576	536	560
New Zealand	..	857	-	911	781	679	-	734	694	-	-	694
OECD Asia Oceania	648	669	618	615	624	614	609	597	571	573	605	583
Austria	749	586	510	555	530	534	569	600	590	529	590	570
Belgium	458	439	741	828	752	742	720	575	669	537	544	584
Czech Republic	848	573	1 044	744	719	710	965	1 134	1 191	975	1 152	1 106
Denmark	610	665	694	504	492	494	518	500	509	668	627	601
Estonia	371	..	588	762	832	748	886	904	763	818	590	724
Finland	459	425	493	563	568	602	562	460	478	430	495	468
France	603	506	547	627	869	788	809	805	950	860	813	874
Germany	817	522	641	453	954	555	670	641	648	589	604	614
Greece	746	737	731	721	714	695	731	753	764	769	757	763
Hungary	734	751	688	910	913	977	935	861	701	860	1 263	941
Iceland	520	694	624	781	624	781	..	..	..	..	..	..
Ireland	756	736	696	766	741	758	653	656	727	703	721	717
Italy	672	663	704	723	710	745	778	782	718	823	781	774
Luxembourg	1 021	1 226	-	..	-	-	-	..	-	-	..	..
Netherlands	695	729	646	498	488	527	505	504	461	513	543	506
Norway	..	-	406	370	356	359	485	431	397	331	369	366
Poland	820	650	608	605	519	523	506	504	488	463	487	480
Portugal	707	737	635	648	648	623	615	632	607	559	526	564
Slovak Republic	380	519	477	395	408	422	407	435	614	674	710	666
Slovenia	480	1 375	689	612	634	607	811	811	687	1 049	761	832
Spain	805	795	630	660	696	603	723	718	671	674	708	684
Sweden	308	321	359	404	392	393	395	382	672	385	364	474
Switzerland	718	714	365	346	398	405	412	387	389	430	436	419
Turkey	899	951	870	711	681	758	686	723	796	779	766	780
United Kingdom	660	672	468	826	682	623	701	733	819	749	717	762
OECD Europe	675	666	658	661	713	670	713	716	706	710	705	707
<i>European Union - 27</i>	<i>704</i>	<i>661</i>	<i>652</i>	<i>666</i>	<i>722</i>	<i>676</i>	<i>723</i>	<i>720</i>	<i>706</i>	<i>712</i>	<i>715</i>	<i>711</i>

* CO₂ emissions from oil consumed for electricity generation, in both electricity-only and combined heat and power plants, divided by output of electricity generated from oil. Both main activity producers and autoproducers have been included in the calculation. This indicator is set as not available when the electricity output is very small or when values do not fall within expected ranges due to data quality.

CO₂ emissions per kWh from electricity generation using oilgrammes CO₂ / kilowatt hour

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	average 09-11
Non-OECD Total	785	814	782	794	807	795	785	801	838	832	837	836
Albania	877	618	1 349	1 182	2 013	1 515	1 234	-	..	..	..	..
Armenia	578	306	-	-	-	-	-	-	-	-	-	-
Azerbaijan	369	837	839	650	839	616	816	816	814	674	771	753
Belarus	687	696	653	638	584	582	610	638	586	611	614	604
Bosnia and Herzegovina	947	1 977	1 085	1 044	1 043	1 041	1 041	-	836	766	726	776
Bulgaria	469	622	707	666	750	718	750	768	703	835	957	832
Croatia	703	642	707	692	680	676	690	665	647	544	605	599
Cyprus *	838	822	838	772	789	758	761	761	750	714	760	742
Georgia	..	..	..	..	..	..	..	..	..	..	..	..
Gibraltar	737	766	760	743	761	751	751	757	757	762	752	757
Kazakhstan	1 217	345	312	313	343	654	666	383	311	306	307	308
Kosovo **	..	..	1 138	1 070	1 030	959	897	843	821	841	1 132	931
Kyrgyzstan	-	-	-	-	-	-	-	-	-	-	-	-
Latvia	503	493	699	527	336	819	655	407	604	854	432	630
Lithuania	511	595	545	778	786	816	603	525	520	522	559	534
FYR of Macedonia	1 189	912	780	1 245	1 215	759	777	840	790	804	799	798
Malta	2 119	932	819	913	1 034	954	1 012	849	850	872	866	863
Republic of Moldova	926	1 990	2 918	717	763	765	-	697	682	687	265	545
Montenegro **	..	..	..	-	-	-	-	-	-	-	-	-
Romania	1 272	648	605	610	596	581	622	671	634	608	880	707
Russian Federation	634	515	733	770	761	715	729	753	755	837	800	797
Serbia **	902	914	914	917	780	1 080	703	784	988	746	684	806
Tajikistan	-	-	-	-	-	-	-	-	-	-	-	-
Turkmenistan	-	-	-	-	-	-	-	-	-	-	-	-
Ukraine	856	805	630	810	966	989	965	653	919	687	952	853
Uzbekistan	3 012	795	777	777	778	777	778	778	780	783	787	783
Non-OECD Europe and Eurasia	749	630	744	743	763	716	753	723	729	769	793	764
Algeria	1 050	1 178	863	869	948	961	916	914	936	998	910	948
Angola	..	..	1 353	1 341	1 339	1 341	1 342	1 342	1 343	1 343	1 342	1 342
Benin	1 200	951	616	749	716	716	671	688	725	724	726	725
Botswana	1 091	1 054	1 051	1 055	1 026	1 026	1 026	-	-	-	-	-
Cameroon	852	893	919	600	698	739	705	739	711	858	878	816
Congo	1 058	1 587	-	-	-	-	1 411	-	1 092	1 050	1 058	1 067
Dem. Rep. of Congo	1 012	1 219	1 058	794	907	1 058	907	747	1 058	1 058	1 058	1 058
Côte d'Ivoire	616	692	970	1 166	1 333	968	1 037	1 047	786	944	939	889
Egypt	952	808	280	966	810	743	621	632	606	533	578	572
Eritrea	..	1 703	1 340	1 006	978	969	948	808	839	856	854	850
Ethiopia	1 164	641	828	882	794	953	960	959	1 094	1 127	1 155	1 125
Gabon	895	803	777	681	699	709	689	659	1 019	1 021	1 021	1 021
Ghana	-	836	771	665	860	827	772	842	812	1 043	869	908
Kenya	712	619	899	898	901	900	900	899	900	899	899	899
Libya	779	1 290	1 144	895	995	1 051	951	752	814	814	773	800
Morocco	773	932	741	1 042	921	843	794	810	744	734	776	751
Mozambique	504	907	1 058	814	907	794	1 058	-	-	-	-	-
Namibia	..	833	-	-	666	740	1 110	999	1 110	1 110	1 110	1 110
Nigeria	772	729	725	726	725	725	725	724	725	726	726	725
Senegal	941	980	1 045	876	917	871	709	709	777	754	786	772
South Africa	-	819	-	-	-	-	753	748	771	751	751	757
Sudan	884	972	942	891	917	944	816	818	821	826	824	824
United Rep. of Tanzania	3 135	1 495	1 488	1 499	924	919	891	901	976	1 051	1 126	1 051
Togo	1 058	1 058	1 303	793	586	794	837	847	819	893	840	851
Tunisia	831	921	907	764	781	741	731	718	727	..	946	836
Zambia	1 091	917	922	896	847	884	996	865	878	865	862	869
Zimbabwe	-	-	1 539	1 965	2 117	2 117	2 117	2 117	2 117	2 117	2 117	2 117
Other Africa	673	576	752	752	779	788	784	782	748	770	770	763
Africa	850	935	679	894	886	865	770	736	739	713	733	728

* Please refer to Part I, Chapter 4, Geographical Coverage.

** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

CO₂ emissions per kWh from electricity generation using oilgrammes CO₂ / kilowatt hour

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	average 09-11
Bangladesh	1 101	1 004	1 078	1 013	1 091	1 091	1 117	1 117	1 118	1 118	1 118	1 118
Brunei Darussalam	866	847	690	766	766	819	770	770	772	752	858	794
Cambodia	..	805	836	848	845	843	842	856	851	839	840	843
Chinese Taipei	692	696	688	790	804	782	829	825	911	879	839	876
India	1 129	1 105	1 176	1 128	1 054	1 218	1 248	1 429	1 677	1 184	1 574	1 478
Indonesia	817	889	786	727	740	714	792	739	753	771	758	761
DPR of Korea	1 308	1 379	1 379	1 379	1 379	1 378	1 380	1 380	1 379	1 380	1 380	1 380
Malaysia	861	831	846	838	817	813	829	981	776	625	693	698
Mongolia	820	765	882	957	1 012	1 023	1 004	1 012	1 027	1 031	1 022	1 027
Myanmar	741	894	868	770	840	794	840	794	847	770	794	803
Nepal	-	827	755	971	1 062	1 042	1 129	1 129	1 042	1 129	1 129	1 100
Pakistan	890	757	755	795	692	749	719	731	762	766	705	745
Philippines	563	656	685	721	751	723	664	722	695	662	744	700
Singapore	909	1 151	834	835	790	795	807	753	729	724	721	725
Sri Lanka	1 231	696	826	803	759	657	658	764	710	811	751	758
Thailand	786	740	748	714	728	738	763	728	761	715	682	719
Vietnam	924	900	914	1 374	1 044	1 015	998	1 241	1 008	920	847	925
Other Asia	771	582	626	842	895	878	920	955	936	952	952	947
Asia	815	809	826	845	815	821	831	858	868	840	833	847
People's Rep. of China	817	817	863	831	826	828	834	858	836	780	766	794
Hong Kong, China	619	825	788	742	798	805	829	836	983	1 075	1 027	1 028
China	815	818	863	830	826	828	834	858	838	782	770	797
Argentina	1 093	632	1 013	922	808	767	764	750	746	735	727	736
Bolivia	941	948	953	947	943	938	943	940	946	945	939	943
Brazil	827	825	805	714	762	722	714	692	677	719	683	693
Colombia	890	891	864	877	877	874	871	871	893	894	891	893
Costa Rica	807	916	965	959	852	900	896	888	820	833	726	793
Cuba	853	915	766	922	913	838	819	809	1 204	1 134	1 052	1 130
Dominican Republic	966	1 017	860	938	1 078	1 095	1 087	1 048	955	1 002	989	982
Ecuador	873	810	761	729	978	1 185	1 205	872	766	785	923	825
El Salvador	984	927	773	688	723	728	721	720	625	630	715	657
Guatemala	888	881	780	812	823	804	803	806	797	797	797	797
Haiti	1 980	669	716	573	587	582	554	560	560	563	484	536
Honduras	556	845	737	646	619	423	670	661	627	616	648	630
Jamaica	819	936	866	638	594	504	643	656	599	810	676	695
Netherlands Antilles	717	714	714	713	711	710	708	707	707	707	708	707
Nicaragua	892	868	751	742	736	746	751	745	732	730	713	725
Panama	1 157	1 027	781	782	769	780	735	721	693	697	694	694
Paraguay	898	926	-	-	-	-	-	-	-	-	-	-
Peru	802	965	881	812	1 142	934	1 425	1 131	1 000	976	1 008	995
Trinidad and Tobago	..	..	..	..	..	..	..	..	..	661	918	790
Uruguay	844	826	860	820	824	843	807	786	811	646	708	722
Venezuela	895	1 200	890	936	907	998	930	886	889	900	912	900
Other Non-OECD Americas	240	229	209	226	219	218	230	247	249	248	285	260
Non-OECD Americas	682	667	635	643	657	654	665	662	690	697	696	694
Bahrain	-	-	-	-	-	1 312	1 314	1 231	-	-	-	-
Islamic Republic of Iran	907	910	912	906	908	904	906	906	906	904	902	904
Iraq	667	2 025	690	594	980	619	672	1 237	2 065	2 380	2 305	2 250
Jordan	855	860	717	753	730	699	912	850	923	754	687	788
Kuwait	1 197	665	917	845	917	942	939	977	1 008	855	918	927
Lebanon	2 753	784	773	658	645	751	696	736	754	766	744	755
Oman	1 056	1 056	1 056	1 055	1 056	1 055	1 056	903	771	799	809	793
Qatar	-	-	-	-	-	-	-	-	-	-	-	-
Saudi Arabia	834	831	876	872	840	828	776	795	832	823	842	832
Syrian Arab Republic	789	777	730	759	802	789	758	740	762	750	801	771
United Arab Emirates	971	968	953	1 194	1 194	1 194	1 194	1 195	1 193	1 194	1 195	1 194
Yemen	746	946	930	874	841	781	679	636	630	693	655	660
Middle East	877	1 035	840	810	861	842	815	857	933	928	927	929

CO₂ emissions per kWh from electricity generation using natural gas *grammes CO₂ / kilowatt hour

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	average 09-11
World	486	503	480	462	464	458	454	452	450	450	450	450
<i>Annex I Parties</i>	448	475	451	428	430	419	420	418	415	416	421	417
<i>Annex II Parties</i>	509	493	444	415	415	401	404	399	399	400	400	400
<i>North America</i>	546	536	483	452	449	414	419	412	406	409	409	408
<i>Europe</i>	454	418	386	359	358	362	362	362	366	366	358	364
<i>Asia Oceania</i>	475	467	446	433	448	449	452	451	449	443	445	446
<i>Annex I EIT</i>	378	435	481	474	485	487	485	490	483	478	504	489
<i>Non-Annex I Parties</i>	629	579	547	521	524	528	514	509	505	501	492	499
<i>Annex I Kyoto Parties</i>	408	438	436	417	422	424	424	425	424	423	433	427
Non-OECD Total	468	516	531	520	525	531	519	518	514	509	511	511
OECD Total	510	492	441	413	413	400	402	398	397	399	398	398
Canada	403	405	455	439	446	436	449	489	460	496	479	478
Chile	777	574	370	407	465	414	463	501	450	383	410	414
Mexico	555	513	489	419	420	428	420	417	400	419	405	408
United States	549	541	484	452	449	413	417	408	403	405	404	404
OECD Americas	546	535	481	447	446	415	419	412	405	410	408	408
Australia	565	558	584	395	531	530	529	533	537	480	508	508
Israel	-	516	541	526	559	481	499	440	433	442	436	437
Japan	466	459	436	438	441	443	445	442	438	439	437	438
Korea	496	436	379	372	369	370	372	367	364	370	368	367
New Zealand	507	510	463	433	428	415	415	397	401	415	414	410
OECD Asia Oceania	476	465	439	424	435	434	438	434	434	427	429	430
Austria	437	493	395	328	329	333	335	328	319	306	324	316
Belgium	513	436	385	368	372	335	331	332	339	332	299	323
Czech Republic	251	414	465	501	459	434	347	422	449	405	423	426
Denmark	292	271	286	290	282	288	278	273	279	262	258	266
Estonia	253	252	252	253	245	238	245	239	237	273	267	259
Finland	270	331	242	258	239	267	243	243	236	236	239	237
France	337	335	288	247	264	314	318	322	463	520	472	485
Germany	464	446	415	315	320	311	352	355	362	349	341	351
Greece	459	435	505	416	459	416	416	423	385	490	401	425
Hungary	561	544	457	402	396	399	405	393	360	365	367	364
Iceland	-	-	-	-	-	-	-	-	-	-	-	-
Ireland	499	480	460	407	412	409	413	392	395	398	391	395
Italy	475	466	431	401	393	382	380	376	374	374	372	373
Luxembourg	662	633	642	393	393	394	391	399	387	394	402	394
Netherlands	444	353	310	322	321	337	329	333	331	330	315	325
Norway	-	302	302	301	302	301	341	312	302	374	356	344
Poland	527	444	507	507	346	360	354	346	339	320	337	332
Portugal	-	-	372	359	357	353	352	355	361	359	355	358
Slovak Republic	813	837	490	329	316	295	305	310	339	385	347	357
Slovenia	..	345	273	307	291	268	332	345	395	378	374	382
Spain	423	469	311	324	319	356	339	349	353	360	351	355
Sweden	217	218	249	217	218	219	215	216	209	209	208	209
Switzerland	269	242	240	245	248	260	257	261	261	253	263	259
Turkey	488	419	356	365	374	356	362	364	371	376	371	373
United Kingdom	521	426	396	392	393	400	388	387	390	385	378	384
OECD Europe	461	424	385	361	360	362	362	362	366	367	360	365
<i>European Union - 27</i>	487	434	391	363	360	363	364	363	366	366	358	363

* CO₂ emissions from natural gas consumed for electricity generation, in both electricity-only and combined heat and power plants, divided by output of electricity generated from natural gas. Both main activity producers and autoproducers have been included in the calculation. This indicator is set as not available when the electricity output is very small or when values do not fall within expected ranges due to data quality.

CO₂ emissions per kWh from electricity generation using natural gasgrammes CO₂ / kilowatt hour

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	average 09-11
Non-OECD Total	468	516	531	520	525	531	519	518	514	509	511	511
Albania	-	-	-	-	-	-	-	-	-	-	-	-
Armenia	600	359	526	375	454	525	620	609	504	416	384	435
Azerbaijan	-	490	682	594	525	563	564	554	540	528	519	529
Belarus	421	424	460	454	455	455	451	460	439	445	441	442
Bosnia and Herzegovina	-	-	-	-	-	-	-	-	630	632	698	653
Bulgaria	645	638	571	297	270	288	391	322	299	238	288	275
Croatia	460	568	491	417	403	422	460	416	417	367	363	382
Cyprus *	-	-	-	-	-	-	-	-	-	-	-	-
Georgia	521	854	887	565	520	508	847	476	766	727	434	642
Gibraltar	-	-	-	-	-	-	-	-	-	-	-	-
Kazakhstan	381	559	1 009	602	778	574	574	574	574	574	574	574
Kosovo **	..	..	..	..	..	..	..	..	..	..	..	..
Kyrgyzstan	383	383	434	403	397	421	430	485	485	486	486	486
Latvia	306	372	314	286	280	254	250	281	254	258	259	257
Lithuania	350	..	461	367	376	379	386	402	401	424	386	404
FYR of Macedonia	-	-	..	..	..	..	-	-	613	483	496	531
Malta	-	-	-	-	-	-	-	-	-	-	-	-
Republic of Moldova	515	566	650	528	526	515	524	521	529	521	518	523
Montenegro **	..	..	..	..	..	..	..	..	..	..	..	..
Romania	704	514	506	489	471	428	428	462	369	332	331	344
Russian Federation	357	429	487	487	503	503	499	505	499	494	524	505
Serbia **	402	579	580	567	307	438	490	463	..	..	656	656
Tajikistan	..	..	..	..	..	..	..	..	..	415	..	415
Turkmenistan	720	931	872	872	872	872	872	927	865	954	983	934
Ukraine	383	400	422	386	393	417	411	393	348	370	409	376
Uzbekistan	467	565	644	644	644	644	643	644	642	642	643	642
Non-OECD Europe and Eurasia	399	455	511	499	512	512	511	516	512	506	530	516
Algeria	613	621	614	631	609	618	594	594	638	538	541	572
Angola	-	-	-	-	-	-	-	-	-	-	-	-
Benin	-	-	-	-	-	-	-	-	-	-	-	-
Botswana	-	-	-	-	-	-	-	-	-	-	-	-
Cameroon	-	-	-	-	-	-	538	538	538	538	538	538
Congo	-	-	-	576	573	572	575	576	574	574	584	577
Dem. Rep. of Congo	-	-	-	-	-	574	573	573	573	573	573	573
Côte d'Ivoire	-	736	598	536	627	539	617	687	625	636	623	628
Egypt	490	490	490	490	490	490	490	490	490	490	490	490
Eritrea	..	-	-	-	-	-	-	-	-	-	-	-
Ethiopia	-	-	-	-	-	-	-	-	-	-	-	-
Gabon	1 038	876	929	964	1 013	1 007	1 043	719	502	502	503	502
Ghana	-	-	-	-	-	-	-	-	525	758	594	625
Kenya	-	-	-	-	-	-	-	-	-	-	-	-
Libya	-	591	591	662	662	626	562	595	530	529	529	529
Morocco	-	-	-	-	397	394	409	350	375	409	382	388
Mozambique	-	652	778	775	724	684	573	502	711	600	763	692
Namibia	..	-	-	-	-	-	-	-	-	-	-	-
Nigeria	584	502	543	502	502	502	502	502	502	502	502	502
Senegal	591	604	628	517	519	516	513	513	680	679	677	679
South Africa	-	-	-	-	-	-	-	-	-	-	-	-
Sudan	-	-	-	-	-	-	-	-	-	-	-	-
United Rep. of Tanzania	-	-	-	-	569	602	579	552	604	520	547	557
Togo	-	-	-	-	-	-	-	-	-	-	-	-
Tunisia	559	533	536	481	470	477	483	485	469	468	460	466
Zambia	-	-	-	-	-	-	-	-	-	-	-	-
Zimbabwe	-	-	-	-	-	-	-	-	-	-	-	-
Other Africa	-	-	-	502	502	502	502	502	502	502	501	502
Africa	554	539	542	530	526	527	521	524	525	507	505	512

* Please refer to Part I, Chapter 4, Geographical Coverage.

** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004.

CO₂ emissions per kWh from electricity generation using natural gasgrammes CO₂ / kilowatt hour

	1990	1995	2000	2004	2005	2006	2007	2008	2009	2010	2011	average 09-11
Bangladesh	602	586	547	534	535	554	557	563	566	575	537	559
Brunei Darussalam	924	881	796	821	801	839	739	791	789	730	716	745
Cambodia	..	-	-	-	-	-	-	-	-	-	-	-
Chinese Taipei	504	508	464	426	429	429	424	429	422	423	426	424
India	812	539	386	393	391	377	364	359	432	464	404	433
Indonesia	670	509	519	587	503	606	546	542	591	516	520	542
DPR of Korea	-	-	-	-	-	-	-	-	-	-	-	-
Malaysia	574	503	499	427	502	484	463	494	437	536	551	508
Mongolia	-	-	-	-	-	-	-	-	-	-	-	-
Myanmar	1 041	843	686	725	725	725	725	725	725	725	725	725
Nepal	-	-	-	-	-	-	-	-	-	-	-	-
Pakistan	662	594	550	526	537	536	573	586	562	557	541	553
Philippines	-	854	..	356	345	330	338	341	349	329	355	344
Singapore	-	447	446	446	446	446	446	446	440	443	444	442
Sri Lanka	-	-	-	-	-	-	-	-	-	-	-	-
Thailand	503	468	483	470	465	465	459	450	446	444	420	437
Vietnam	..	514	591	404	434	444	431	428	418	409	409	412
Other Asia	-	502	502	502	502	502	502	502	502	502	502	502
Asia	632	524	483	458	463	463	451	455	460	472	454	462
People's Rep. of China	524	517	519	520	519	519	518	518	518	518	518	518
Hong Kong, China	-	859	468	451	454	454	454	454	454	454	454	454
China	524	525	485	479	488	490	502	500	506	507	510	508
Argentina	614	437	514	450	460	691	586	472	501	479	486	489
Bolivia	581	696	642	566	552	550	560	624	632	632	669	644
Brazil	513	740	488	472	473	451	450	440	438	424	461	441
Colombia	646	646	534	492	496	485	544	462	464	464	464	464
Costa Rica	-	-	-	-	-	-	-	-	-	-	-	-
Cuba	502	502	502	502	502	502	502	502	502	502	502	502
Dominican Republic	-	-	-	502	502	502	502	502	502	502	502	502
Ecuador	-	-	-	452	452	452	452	452	452	452	452	452
El Salvador	-	-	-	-	-	-	-	-	-	-	-	-
Guatemala	-	-	-	-	-	-	-	-	-	-	-	-
Haiti	-	-	-	-	-	-	-	-	-	-	-	-
Honduras	-	-	-	-	-	-	-	-	-	-	-	-
Jamaica	-	-	-	-	-	-	-	-	-	-	-	-
Netherlands Antilles	-	-	-	-	-	-	-	-	-	-	-	-
Nicaragua	-	-	-	-	-	-	-	-	-	-	-	-
Panama	-	-	-	-	-	-	-	-	-	-	-	-
Paraguay	-	-	-	-	-	-	-	-	-	-	-	-
Peru	671	670	670	610	548	534	462	472	550	598	611	586
Trinidad and Tobago	714	716	688	754	708	742	735	705	715	700	505	640
Uruguay	-	-	-	578	469	536	578	466	505	499	501	502
Venezuela	841	675	644	638	658	654	631	625	607	606	606	607
Other Non-OECD Americas	505	505	502	502	502	502	502	502	502	502	502	502
Non-OECD Americas	702	568	552	508	511	605	566	500	525	508	514	516
Bahrain	1 061	815	868	881	873	797	826	650	665	640	601	635
Islamic Republic of Iran	505	525	492	502	520	514	505	513	510	502	481	497
Iraq	502	502	502	502	331	331	331	331	331	331	331	331
Jordan	548	681	671	622	610	600	525	549	555	508	515	526
Kuwait	502	502	502	419	446	446	446	418	529	574	574	559
Lebanon	-	-	-	-	-	-	-	-	502	502	-	502
Oman	696	776	741	847	819	848	834	809	796	745	726	756
Qatar	1 077	1 131	771	649	618	617	565	534	507	493	490	497
Saudi Arabia	827	792	723	665	661	679	676	673	665	636	640	647
Syrian Arab Republic	543	543	543	543	543	543	543	543	543	543	543	543
United Arab Emirates	735	730	721	906	836	812	711	721	623	590	590	601
Yemen	-	-	-	-	-	-	-	-	-	551	551	551
Middle East	693	669	618	634	626	620	597	590	568	552	545	555

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
World ***												
CO ₂ emissions	67	75	86	89	100	104	113	131	138	145	149	1.9%
Population	71	77	84	92	100	108	115	123	129	130	132	1.3%
GDP per population (GDP per capita)	73	80	89	93	100	103	115	129	139	144	148	1.9%
Energy intensity (TPES/GDP)	121	115	110	104	100	95	86	83	78	78	77	-1.2%
Carbon intensity: ESCII (CO ₂ /TPES)	107	106	105	101	100	99	99	100	99	99	100	0.0%
Annex I Parties												
CO ₂ emissions	..	..	..	..	100	95	99	102	93	97	96	-0.2%
Population	..	..	..	..	100	103	105	107	109	110	110	0.5%
GDP per population (GDP per capita)	..	..	..	..	100	102	117	129	130	133	135	1.4%
Energy intensity (TPES/GDP)	..	..	..	..	100	93	84	78	71	72	70	-1.7%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	96	96	95	92	92	93	-0.3%
Annex II Parties												
CO ₂ emissions	88	91	97	94	100	104	112	115	104	108	106	0.3%
Population	88	91	94	97	100	104	107	110	113	114	114	0.6%
GDP per population (GDP per capita)	62	68	78	87	100	107	121	130	128	130	132	1.3%
Energy intensity (TPES/GDP)	141	132	123	109	100	97	90	84	77	78	74	-1.4%
Carbon intensity: ESCII (CO ₂ /TPES)	113	110	107	102	100	97	97	96	93	94	95	-0.3%
Annex II North America												
CO ₂ emissions	87	89	96	93	100	106	118	119	108	112	110	0.4%
Population	83	86	91	95	100	106	113	118	123	124	125	1.1%
GDP per population (GDP per capita)	66	71	80	90	100	106	124	133	130	132	133	1.4%
Energy intensity (TPES/GDP)	149	141	129	108	100	96	85	78	72	71	69	-1.7%
Carbon intensity: ESCII (CO ₂ /TPES)	107	104	102	101	100	98	99	98	95	97	95	-0.2%
Annex II Europe												
CO ₂ emissions	97	98	106	98	100	100	102	106	95	97	93	-0.3%
Population	94	96	97	98	100	102	103	106	109	109	110	0.4%
GDP per population (GDP per capita)	64	70	81	86	100	107	121	129	128	130	132	1.3%
Energy intensity (TPES/GDP)	131	122	117	110	100	96	88	85	77	79	74	-1.4%
Carbon intensity: ESCII (CO ₂ /TPES)	124	119	115	105	100	95	93	91	88	87	87	-0.7%
Annex II Asia Oceania												
CO ₂ emissions	68	78	82	83	100	108	115	121	113	116	120	0.9%
Population	84	89	94	97	100	102	104	106	107	107	108	0.3%
GDP per population (GDP per capita)	54	60	69	82	100	106	111	118	116	121	121	0.9%
Energy intensity (TPES/GDP)	134	130	121	104	100	103	103	97	91	92	86	-0.7%
Carbon intensity: ESCII (CO ₂ /TPES)	113	113	105	100	100	96	96	100	100	98	107	0.3%
Annex I EIT												
CO ₂ emissions	..	..	..	..	100	71	64	65	62	66	68	-1.8%
Population	..	..	..	..	100	99	98	96	95	95	95	-0.3%
GDP per population (GDP per capita)	..	..	..	..	100	71	80	107	122	126	131	1.3%
Energy intensity (TPES/GDP)	..	..	..	..	100	104	87	71	60	63	62	-2.3%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	96	94	90	89	88	89	-0.6%
Non-Annex I Parties												
CO ₂ emissions	..	..	..	..	100	123	142	192	232	247	261	4.7%
Population	..	..	..	..	100	109	119	127	134	136	138	1.5%
GDP per population (GDP per capita)	..	..	..	..	100	115	133	162	198	210	220	3.8%
Energy intensity (TPES/GDP)	..	..	..	..	100	94	85	84	79	78	77	-1.2%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	105	105	110	111	110	112	0.5%
Annex I Kyoto Parties												
CO ₂ emissions	..	..	..	..	100	89	89	92	85	88	88	-0.6%
Population	..	..	..	..	100	101	102	103	104	104	104	0.2%
GDP per population (GDP per capita)	..	..	..	..	100	100	112	124	127	130	132	1.3%
Energy intensity (TPES/GDP)	..	..	..	..	100	92	83	78	71	73	70	-1.7%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	95	93	92	90	89	91	-0.4%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

*** Total world includes non-OECD total, OECD total as well as international marine bunkers and international aviation bunkers.

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Non-OECD Total												
CO ₂ emissions	46	58	74	83	100	103	112	146	173	183	194	3.2%
Population	68	74	82	91	100	109	117	125	132	134	135	1.5%
GDP per population (GDP per capita)	71	82	94	95	100	102	117	146	178	189	198	3.3%
Energy intensity (TPES/GDP)	102	98	95	98	100	91	81	77	70	70	68	-1.8%
Carbon intensity: ESCII (CO ₂ /TPES)	93	98	101	98	100	101	100	104	105	104	106	0.3%
OECD Total												
CO ₂ emissions	84	88	96	94	100	105	113	117	108	112	111	0.5%
Population	84	88	92	96	100	104	108	112	115	116	117	0.7%
GDP per population (GDP per capita)	64	70	80	88	100	106	121	131	130	133	135	1.4%
Energy intensity (TPES/GDP)	138	129	122	108	100	97	89	83	77	77	75	-1.4%
Carbon intensity: ESCII (CO ₂ /TPES)	113	110	107	103	100	97	97	96	93	94	94	-0.3%
Canada												
CO ₂ emissions	79	88	100	94	100	108	124	130	121	123	124	1.0%
Population	79	84	89	93	100	106	111	116	122	123	125	1.1%
GDP per population (GDP per capita)	67	76	86	93	100	103	120	130	128	130	132	1.3%
Energy intensity (TPES/GDP)	128	126	121	107	100	102	90	86	77	75	73	-1.5%
Carbon intensity: ESCII (CO ₂ /TPES)	117	111	108	102	100	97	103	99	101	102	102	0.1%
Chile												
CO ₂ emissions	67	55	68	63	100	125	169	187	211	225	246	4.4%
Population	74	79	85	92	100	109	117	123	128	130	131	1.3%
GDP per population (GDP per capita)	77	61	81	79	100	139	159	188	205	215	226	4.0%
Energy intensity (TPES/GDP)	109	112	98	95	100	86	97	87	80	79	81	-1.0%
Carbon intensity: ESCII (CO ₂ /TPES)	108	100	101	92	100	96	94	93	100	102	103	0.1%
Mexico												
CO ₂ emissions	37	52	80	95	100	112	132	145	151	158	163	2.4%
Population	61	70	81	90	100	112	121	128	132	133	134	1.4%
GDP per population (GDP per capita)	75	87	103	102	100	96	116	121	121	126	130	1.3%
Energy intensity (TPES/GDP)	76	80	93	96	100	98	84	90	90	87	87	-0.7%
Carbon intensity: ESCII (CO ₂ /TPES)	104	108	103	107	100	106	111	105	105	108	107	0.3%
United States												
CO ₂ emissions	88	90	96	93	100	106	117	119	106	112	109	0.4%
Population	83	86	91	95	100	107	113	118	123	124	125	1.1%
GDP per population (GDP per capita)	66	70	80	90	100	106	124	133	130	132	133	1.4%
Energy intensity (TPES/GDP)	151	142	129	109	100	95	85	77	71	71	69	-1.8%
Carbon intensity: ESCII (CO ₂ /TPES)	106	104	102	101	100	98	99	98	94	96	95	-0.2%
OECD Americas												
CO ₂ emissions	85	88	95	93	100	106	119	121	110	115	113	0.6%
Population	78	82	88	94	100	108	115	120	125	126	127	1.1%
GDP per population (GDP per capita)	69	74	84	91	100	105	122	131	128	130	132	1.3%
Energy intensity (TPES/GDP)	146	137	126	107	100	96	85	78	72	72	70	-1.7%
Carbon intensity: ESCII (CO ₂ /TPES)	108	105	102	101	100	98	99	98	95	97	96	-0.2%
Australia												
CO ₂ emissions	55	69	80	85	100	110	130	146	156	152	153	2.0%
Population	77	81	86	93	100	106	112	120	129	131	133	1.4%
GDP per population (GDP per capita)	75	79	86	93	100	111	126	141	146	148	150	2.0%
Energy intensity (TPES/GDP)	104	110	109	98	100	91	88	78	75	74	71	-1.6%
Carbon intensity: ESCII (CO ₂ /TPES)	93	99	99	101	100	102	104	111	110	107	107	0.3%
Israel												
CO ₂ emissions	43	51	58	73	100	138	165	175	189	203	200	3.4%
Population	66	74	83	91	100	119	135	149	160	163	166	2.4%
GDP per population (GDP per capita)	69	80	83	89	100	117	131	132	145	149	153	2.1%
Energy intensity (TPES/GDP)	109	102	99	82	100	98	90	82	81	83	80	-1.1%
Carbon intensity: ESCII (CO ₂ /TPES)	86	83	86	111	100	102	103	109	101	100	99	-0.1%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Japan												
CO ₂ emissions	71	81	83	83	100	108	111	114	103	107	112	0.5%
Population	85	90	95	98	100	102	103	103	104	104	103	0.2%
GDP per population (GDP per capita)	51	57	67	80	100	106	109	115	111	117	116	0.7%
Energy intensity (TPES/GDP)	142	135	123	105	100	105	106	100	93	94	88	-0.6%
Carbon intensity: ESCII (CO ₂ /TPES)	117	116	106	100	100	95	94	96	95	94	106	0.3%
Korea												
CO ₂ emissions	23	33	54	67	100	156	191	205	225	246	256	4.6%
Population	77	82	89	95	100	105	110	112	115	115	116	0.7%
GDP per population (GDP per capita)	24	32	44	64	100	139	172	209	232	245	252	4.5%
Energy intensity (TPES/GDP)	98	99	112	94	100	106	107	96	93	95	95	-0.2%
Carbon intensity: ESCII (CO ₂ /TPES)	125	127	123	116	100	101	94	91	91	92	92	-0.4%
New Zealand												
CO ₂ emissions	62	76	74	88	100	113	138	152	140	139	136	1.5%
Population	85	92	93	97	100	109	115	123	128	130	131	1.3%
GDP per population (GDP per capita)	84	92	88	99	100	106	117	132	132	130	131	1.3%
Energy intensity (TPES/GDP)	75	81	85	91	100	99	99	81	80	84	82	-0.9%
Carbon intensity: ESCII (CO ₂ /TPES)	115	112	105	101	100	98	104	116	103	98	96	-0.2%
OECD Asia Oceania												
CO ₂ emissions	61	71	78	81	100	116	127	134	131	137	141	1.7%
Population	82	87	92	97	100	103	106	108	110	111	111	0.5%
GDP per population (GDP per capita)	52	58	68	80	100	110	118	128	129	134	135	1.4%
Energy intensity (TPES/GDP)	128	125	118	102	100	105	106	99	95	96	92	-0.4%
Carbon intensity: ESCII (CO ₂ /TPES)	113	113	106	102	100	97	96	98	98	96	102	0.1%
Austria												
CO ₂ emissions	86	89	99	96	100	105	109	132	114	124	121	0.9%
Population	98	99	98	99	100	104	104	107	109	109	110	0.4%
GDP per population (GDP per capita)	60	69	81	87	100	108	125	132	136	139	142	1.7%
Energy intensity (TPES/GDP)	128	119	116	108	100	97	88	96	87	91	85	-0.8%
Carbon intensity: ESCII (CO ₂ /TPES)	114	110	106	103	100	98	95	97	88	90	91	-0.4%
Belgium												
CO ₂ emissions	108	107	116	94	100	107	110	105	93	100	101	0.0%
Population	97	98	99	99	100	102	103	105	108	109	110	0.5%
GDP per population (GDP per capita)	63	71	83	87	100	106	121	128	129	131	132	1.3%
Energy intensity (TPES/GDP)	135	125	118	106	100	103	97	90	85	88	84	-0.8%
Carbon intensity: ESCII (CO ₂ /TPES)	132	122	120	103	100	96	91	86	79	79	82	-0.9%
Czech Republic												
CO ₂ emissions	97	98	107	112	100	80	79	77	71	74	73	-1.5%
Population	95	97	100	100	100	100	99	99	101	101	101	0.1%
GDP per population (GDP per capita)	73	81	88	93	100	96	106	130	142	145	148	1.9%
Energy intensity (TPES/GDP)	132	111	108	107	100	87	78	70	59	60	59	-2.5%
Carbon intensity: ESCII (CO ₂ /TPES)	106	112	113	112	100	95	95	85	84	83	83	-0.9%
Denmark												
CO ₂ emissions	109	104	124	120	100	115	100	96	93	93	82	-0.9%
Population	97	98	100	99	100	102	104	105	107	108	108	0.4%
GDP per population (GDP per capita)	70	72	82	94	100	110	124	130	126	127	128	1.2%
Energy intensity (TPES/GDP)	159	141	135	119	100	100	83	79	78	81	75	-1.4%
Carbon intensity: ESCII (CO ₂ /TPES)	102	103	112	108	100	103	93	88	88	83	79	-1.1%
Estonia												
CO ₂ emissions	..	..	..	..	100	45	40	47	41	51	53	-2.9%
Population	..	..	..	..	100	91	86	85	84	84	84	-0.8%
GDP per population (GDP per capita)	..	..	..	..	100	77	112	162	158	164	177	2.8%
Energy intensity (TPES/GDP)	..	..	..	..	100	75	49	38	36	41	38	-4.5%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	84	85	90	85	91	95	-0.3%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Finland												
CO ₂ emissions	73	82	101	89	100	103	102	102	101	116	102	0.1%
Population	92	94	96	98	100	102	104	105	107	108	108	0.4%
GDP per population (GDP per capita)	56	67	77	86	100	95	118	133	132	135	138	1.6%
Energy intensity (TPES/GDP)	123	110	117	107	100	105	93	86	83	88	82	-0.9%
Carbon intensity: ESCII (CO ₂ /TPES)	114	118	117	98	100	101	90	84	86	91	83	-0.9%
France												
CO ₂ emissions	122	122	131	102	100	100	107	110	99	101	93	-0.3%
Population	90	93	95	97	100	102	104	108	111	111	112	0.5%
GDP per population (GDP per capita)	64	72	83	88	100	104	116	122	120	122	124	1.0%
Energy intensity (TPES/GDP)	122	110	108	107	100	100	93	92	85	86	81	-1.0%
Carbon intensity: ESCII (CO ₂ /TPES)	173	166	153	112	100	95	95	91	88	87	83	-0.9%
Germany												
CO ₂ emissions	103	103	111	107	100	91	87	84	78	81	79	-1.1%
Population	99	99	99	98	100	103	104	104	103	103	103	0.1%
GDP per population (GDP per capita)	62	68	81	87	100	107	117	120	124	130	133	1.4%
Energy intensity (TPES/GDP)	141	133	128	120	100	87	79	76	70	70	65	-2.1%
Carbon intensity: ESCII (CO ₂ /TPES)	119	115	109	105	100	95	91	88	87	86	89	-0.6%
Greece												
CO ₂ emissions	36	49	65	78	100	108	125	136	129	120	119	0.8%
Population	87	89	95	98	100	103	106	107	109	109	109	0.4%
GDP per population (GDP per capita)	74	86	98	96	100	103	119	143	149	141	131	1.3%
Energy intensity (TPES/GDP)	63	72	75	87	100	99	100	92	85	84	87	-0.7%
Carbon intensity: ESCII (CO ₂ /TPES)	89	90	93	95	100	102	99	96	94	93	96	-0.2%
Hungary ***												
CO ₂ emissions	75	88	104	101	83	72	68	70	60	61	59	-2.1%
Population	98	100	102	100	98	98	97	96	95	95	95	-0.2%
GDP per population (GDP per capita)	60	75	88	97	102	91	106	132	130	132	134	1.2%
Energy intensity (TPES/GDP)	108	102	105	101	96	97	81	73	67	68	65	-1.7%
Carbon intensity: ESCII (CO ₂ /TPES)	119	116	111	102	87	83	81	77	73	72	71	-1.4%
Iceland												
CO ₂ emissions	74	85	92	86	100	104	114	116	109	103	98	-0.1%
Population	81	85	89	95	100	105	110	116	125	125	125	1.1%
GDP per population (GDP per capita)	58	66	85	91	100	97	117	137	133	128	131	1.3%
Energy intensity (TPES/GDP)	93	94	94	99	100	106	115	105	155	161	167	2.5%
Carbon intensity: ESCII (CO ₂ /TPES)	172	161	129	101	100	96	77	70	42	40	36	-4.8%
Ireland												
CO ₂ emissions	71	69	85	86	100	108	135	144	129	128	115	0.7%
Population	85	91	97	101	100	103	109	119	129	130	131	1.3%
GDP per population (GDP per capita)	54	62	72	79	100	122	189	220	207	205	207	3.5%
Energy intensity (TPES/GDP)	149	120	119	110	100	84	67	56	54	54	50	-3.3%
Carbon intensity: ESCII (CO ₂ /TPES)	105	103	102	99	100	103	98	99	89	89	86	-0.7%
Italy												
CO ₂ emissions	74	80	91	87	100	103	107	116	98	100	99	-0.1%
Population	95	98	99	100	100	100	100	103	106	107	107	0.3%
GDP per population (GDP per capita)	58	65	79	86	100	106	117	119	113	114	114	0.6%
Energy intensity (TPES/GDP)	130	126	113	103	100	102	100	102	94	96	94	-0.3%
Carbon intensity: ESCII (CO ₂ /TPES)	103	101	101	99	100	95	92	92	87	86	87	-0.7%
Luxembourg												
CO ₂ emissions	149	117	115	96	100	78	77	110	96	102	101	0.0%
Population	90	94	95	96	100	107	114	122	130	133	136	1.5%
GDP per population (GDP per capita)	55	59	65	73	100	113	143	160	159	161	160	2.3%
Energy intensity (TPES/GDP)	244	202	170	130	100	77	60	66	56	58	57	-2.7%
Carbon intensity: ESCII (CO ₂ /TPES)	124	105	110	106	100	84	78	85	83	82	82	-1.0%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

*** The reference year for Hungary corresponds to its base year under the Convention (the average of 1985-1987).

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Netherlands												
CO ₂ emissions	83	90	107	99	100	110	110	117	113	120	112	0.5%
Population	88	91	95	97	100	103	107	109	111	111	112	0.5%
GDP per population (GDP per capita)	70	76	85	88	100	108	128	134	139	141	141	1.7%
Energy intensity (TPES/GDP)	126	129	122	109	100	96	82	82	77	81	75	-1.4%
Carbon intensity: ESCII (CO ₂ /TPES)	107	101	109	107	100	102	99	98	95	94	95	-0.2%
Norway												
CO ₂ emissions	83	85	99	96	100	116	119	129	131	139	135	1.4%
Population	92	94	96	98	100	103	106	109	114	115	117	0.7%
GDP per population (GDP per capita)	57	66	81	94	100	117	136	147	146	145	144	1.8%
Energy intensity (TPES/GDP)	121	111	112	103	100	93	86	79	86	92	79	-1.1%
Carbon intensity: ESCII (CO ₂ /TPES)	131	123	113	101	100	104	95	101	92	90	101	0.0%
Poland ***												
CO ₂ emissions	67	79	96	98	80	77	68	68	67	71	70	-1.6%
Population	87	90	94	98	100	101	101	101	101	102	102	0.1%
GDP per population (GDP per capita)	78	96	96	92	89	98	128	150	181	187	195	2.9%
Energy intensity (TPES/GDP)	96	90	106	104	87	76	52	46	39	40	39	-4.1%
Carbon intensity: ESCII (CO ₂ /TPES)	102	101	100	104	102	102	100	98	94	93	91	-0.4%
Portugal												
CO ₂ emissions	37	46	61	63	100	123	151	160	135	122	122	1.0%
Population	87	92	99	101	100	100	102	106	106	106	107	0.3%
GDP per population (GDP per capita)	56	62	74	75	100	108	131	132	132	135	133	1.3%
Energy intensity (TPES/GDP)	77	81	82	86	100	111	110	113	103	98	98	-0.1%
Carbon intensity: ESCII (CO ₂ /TPES)	98	100	102	96	100	102	103	101	94	87	89	-0.6%
Slovak Republic												
CO ₂ emissions	69	77	98	96	100	72	66	67	59	62	60	-2.4%
Population	86	90	94	98	100	101	102	102	102	102	103	0.1%
GDP per population (GDP per capita)	79	86	92	95	100	90	106	135	161	168	173	2.6%
Energy intensity (TPES/GDP)	98	101	108	104	100	91	77	64	48	49	46	-3.7%
Carbon intensity: ESCII (CO ₂ /TPES)	103	98	105	99	100	86	79	76	75	74	73	-1.5%
Slovenia ****												
CO ₂ emissions	..	..	..	..	93	97	98	108	105	106	106	0.2%
Population	..	..	..	..	101	100	100	101	103	103	104	0.1%
GDP per population (GDP per capita)	..	..	..	..	112	109	135	161	170	171	172	2.2%
Energy intensity (TPES/GDP)	..	..	..	..	86	94	81	77	69	70	69	-1.4%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	95	94	89	87	87	86	85	-0.6%
Spain												
CO ₂ emissions	58	76	91	85	100	113	138	165	138	131	132	1.3%
Population	88	91	97	99	100	101	103	111	118	118	118	0.8%
GDP per population (GDP per capita)	62	74	78	81	100	107	128	139	137	137	137	1.5%
Energy intensity (TPES/GDP)	86	94	100	98	100	104	103	102	88	88	86	-0.7%
Carbon intensity: ESCII (CO ₂ /TPES)	124	120	122	108	100	101	102	105	97	92	95	-0.3%
Sweden												
CO ₂ emissions	156	151	139	111	100	109	100	95	79	90	85	-0.8%
Population	95	96	97	98	100	103	104	106	109	110	110	0.5%
GDP per population (GDP per capita)	71	79	83	90	100	100	119	133	131	139	143	1.7%
Energy intensity (TPES/GDP)	114	110	107	114	100	103	82	78	67	71	66	-2.0%
Carbon intensity: ESCII (CO ₂ /TPES)	205	182	162	111	100	102	99	87	82	82	82	-0.9%
Switzerland												
CO ₂ emissions	94	88	94	100	100	101	102	107	102	105	96	-0.2%
Population	93	94	94	96	100	104	106	110	115	115	116	0.7%
GDP per population (GDP per capita)	79	78	85	90	100	97	105	108	112	115	116	0.7%
Energy intensity (TPES/GDP)	91	96	102	105	100	98	92	90	86	81	77	-1.2%
Carbon intensity: ESCII (CO ₂ /TPES)	139	125	115	110	100	102	99	101	92	98	92	-0.4%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

*** The reference year for Poland corresponds to its base year under the Convention (1988).

**** The reference year for Slovenia corresponds to its base year under the Convention (1986).

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Turkey												
CO ₂ emissions	33	47	56	75	100	120	158	170	202	209	225	3.9%
Population	66	73	81	91	100	108	117	124	131	132	134	1.4%
GDP per population (GDP per capita)	65	74	75	84	100	108	123	144	147	158	170	2.6%
Energy intensity (TPES/GDP)	87	95	99	98	100	100	101	89	96	95	94	-0.3%
Carbon intensity: ESCII (CO ₂ /TPES)	88	92	94	100	100	103	109	107	109	105	106	0.3%
United Kingdom												
CO ₂ emissions	114	106	104	99	100	94	95	97	85	88	81	-1.0%
Population	98	98	98	99	100	101	103	105	108	109	110	0.4%
GDP per population (GDP per capita)	66	71	78	86	100	109	128	144	142	144	144	1.8%
Energy intensity (TPES/GDP)	157	138	126	115	100	95	82	71	62	63	58	-2.6%
Carbon intensity: ESCII (CO ₂ /TPES)	112	109	108	102	100	90	88	90	89	90	88	-0.6%
OECD Europe												
CO ₂ emissions	92	95	105	99	100	98	100	104	95	98	95	-0.3%
Population	90	92	95	97	100	102	104	107	110	110	111	0.5%
GDP per population (GDP per capita)	66	74	83	88	100	106	121	130	131	133	135	1.5%
Energy intensity (TPES/GDP)	129	121	118	111	100	95	86	82	75	76	72	-1.5%
Carbon intensity: ESCII (CO ₂ /TPES)	120	116	114	105	100	96	93	91	88	87	87	-0.6%
European Union - 27												
CO ₂ emissions	..	..	..	..	100	95	95	98	88	90	87	-0.6%
Population	..	..	..	..	100	101	102	104	106	106	106	0.3%
GDP per population (GDP per capita)	..	..	..	..	100	106	121	131	133	136	137	1.5%
Energy intensity (TPES/GDP)	..	..	..	..	100	93	83	79	72	73	69	-1.7%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	95	92	90	87	86	86	-0.7%
Albania												
CO ₂ emissions	62	71	122	115	100	30	49	64	55	59	62	-2.3%
Population	67	73	81	90	100	96	93	96	97	97	98	-0.1%
GDP per population (GDP per capita)	80	91	108	108	100	92	123	156	190	196	201	3.4%
Energy intensity (TPES/GDP)	121	111	130	104	100	57	58	55	42	40	41	-4.1%
Carbon intensity: ESCII (CO ₂ /TPES)	97	96	106	113	100	60	74	79	71	77	76	-1.3%
Armenia												
CO ₂ emissions	..	..	..	..	100	17	17	20	21	20	23	-6.8%
Population	..	..	..	..	100	91	87	86	87	87	87	-0.6%
GDP per population (GDP per capita)	..	..	..	..	100	58	78	139	164	167	174	2.7%
Energy intensity (TPES/GDP)	..	..	..	..	100	40	39	27	24	22	23	-6.7%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	78	64	62	61	61	65	-2.1%
Azerbaijan												
CO ₂ emissions	..	..	..	..	100	62	51	56	45	43	49	-3.4%
Population	..	..	..	..	100	107	112	117	125	126	128	1.2%
GDP per population (GDP per capita)	..	..	..	..	100	39	52	95	181	187	187	3.0%
Energy intensity (TPES/GDP)	..	..	..	..	100	147	85	53	23	22	23	-6.7%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	100	102	95	86	85	88	-0.6%
Belarus												
CO ₂ emissions	..	..	..	..	100	49	47	50	50	52	53	-3.0%
Population	..	..	..	..	100	100	98	96	93	93	93	-0.3%
GDP per population (GDP per capita)	..	..	..	..	100	65	90	133	180	194	205	3.5%
Energy intensity (TPES/GDP)	..	..	..	..	100	83	61	46	35	34	34	-5.0%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	91	87	84	85	86	82	-0.9%
Bosnia and Herzegovina												
CO ₂ emissions	..	..	..	..	100	14	57	66	83	85	96	-0.2%
Population	..	..	..	..	100	77	86	88	87	87	87	-0.7%
GDP per population (GDP per capita)	..	..	..	..	100	142	435	541	631	637	649	9.3%
Energy intensity (TPES/GDP)	..	..	..	..	100	19	17	15	16	17	18	-7.9%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	64	92	92	95	92	95	-0.2%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Bulgaria ***												
CO ₂ emissions	77	88	102	99	91	65	51	56	52	54	60	-2.2%
Population	95	97	99	100	97	94	91	86	84	84	83	-0.8%
GDP per population (GDP per capita)	40	53	70	82	91	82	86	118	137	138	142	1.5%
Energy intensity (TPES/GDP)	161	145	131	120	102	95	77	62	48	49	52	-2.8%
Carbon intensity: ESCII (CO ₂ /TPES)	126	119	113	101	101	88	86	89	92	95	98	-0.1%
Croatia												
CO ₂ emissions	..	..	..	..	100	73	82	96	92	88	87	-0.6%
Population	..	..	..	..	100	98	93	93	93	92	92	-0.4%
GDP per population (GDP per capita)	..	..	..	..	100	74	92	115	120	119	119	0.8%
Energy intensity (TPES/GDP)	..	..	..	..	100	108	101	93	87	86	85	-0.8%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	94	95	98	95	93	93	-0.3%
Cyprus ****												
CO ₂ emissions	46	43	67	72	100	130	163	181	194	187	180	2.8%
Population	107	85	88	93	100	112	119	129	137	138	138	1.6%
GDP per population (GDP per capita)	25	37	62	77	100	111	126	137	143	144	144	1.8%
Energy intensity (TPES/GDP)	164	133	116	94	100	100	104	92	94	90	87	-0.7%
Carbon intensity: ESCII (CO ₂ /TPES)	107	105	106	107	100	105	104	112	105	105	104	0.2%
Georgia												
CO ₂ emissions	..	..	..	..	100	24	14	13	16	15	19	-7.6%
Population	..	..	..	..	100	99	92	91	92	93	93	-0.3%
GDP per population (GDP per capita)	..	..	..	..	100	29	41	59	70	74	79	-1.1%
Energy intensity (TPES/GDP)	..	..	..	..	100	106	62	43	39	37	39	-4.4%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	81	60	57	65	59	66	-2.0%
Gibraltar												
CO ₂ emissions	56	56	66	67	100	185	223	267	302	306	295	5.3%
Population	93	93	100	100	100	104	104	111	111	111	111	0.5%
GDP per population (GDP per capita)	69	75	76	85	100	105	124	131	132	133	136	1.5%
Energy intensity (TPES/GDP)	88	80	86	78	100	169	173	183	207	207	196	3.3%
Carbon intensity: ESCII (CO ₂ /TPES)	99	100	102	100	100	101	101	101	100	100	100	0.0%
Kazakhstan												
CO ₂ emissions	..	..	..	..	100	71	48	66	84	99	99	-0.0%
Population	..	..	..	..	100	97	91	93	98	100	101	0.1%
GDP per population (GDP per capita)	..	..	..	..	100	63	76	123	146	154	163	2.4%
Energy intensity (TPES/GDP)	..	..	..	..	100	116	70	61	60	66	64	-2.1%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	100	98	96	98	98	93	-0.3%
Kosovo *****												
CO ₂ emissions	..	..	..	..	..	..	100	130	164	170	169	4.9%
Population	..	..	..	..	..	..	100	100	104	104	106	0.5%
GDP per population (GDP per capita)	..	..	..	..	..	..	100	141	169	175	181	5.6%
Energy intensity (TPES/GDP)	..	..	..	..	..	..	100	89	90	89	85	-1.4%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	..	..	100	103	104	105	103	0.3%
Kyrgyzstan												
CO ₂ emissions	..	..	..	..	100	20	20	22	23	28	30	-5.6%
Population	..	..	..	..	100	104	112	118	123	124	125	1.1%
GDP per population (GDP per capita)	..	..	..	..	100	49	60	68	82	80	84	-0.8%
Energy intensity (TPES/GDP)	..	..	..	..	100	63	46	42	33	38	39	-4.4%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	62	63	65	70	75	72	-1.6%
Latvia												
CO ₂ emissions	..	..	..	..	100	47	37	41	38	43	41	-4.2%
Population	..	..	..	..	100	93	89	86	85	84	83	-0.9%
GDP per population (GDP per capita)	..	..	..	..	100	61	84	129	128	128	136	1.5%
Energy intensity (TPES/GDP)	..	..	..	..	100	103	65	52	52	55	49	-3.3%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	81	75	70	69	73	73	-1.5%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

*** The reference year for Bulgaria corresponds to its base year under the Convention (1988).

**** Please refer to Part I, Chapter 4, Geographical Coverage.

***** Serbia includes Kosovo from 1990 to 1999 and Montenegro from 1990 to 2004. The reference year for Kosovo is the first year of available data (2000).

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Lithuania												
CO ₂ emissions	..	..	..	..	100	43	34	41	38	40	40	-4.3%
Population	..	..	..	..	100	98	95	92	90	89	87	-0.7%
GDP per population (GDP per capita)	..	..	..	..	100	59	76	114	121	124	135	1.4%
Energy intensity (TPES/GDP)	..	..	..	..	100	94	62	53	50	40	39	-4.4%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	79	76	74	69	92	88	-0.6%
FYR of Macedonia												
CO ₂ emissions	..	..	..	..	100	96	99	103	99	96	106	0.3%
Population	..	..	..	..	100	103	105	107	108	108	108	0.4%
GDP per population (GDP per capita)	..	..	..	..	100	77	87	92	106	108	111	0.5%
Energy intensity (TPES/GDP)	..	..	..	..	100	128	118	116	99	100	105	0.2%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	95	92	90	87	83	85	-0.8%
Malta												
CO ₂ emissions	28	28	43	50	100	103	92	118	107	108	108	0.4%
Population	86	86	90	95	100	105	108	114	117	118	118	0.8%
GDP per population (GDP per capita)	30	46	76	78	100	125	156	154	162	166	168	2.5%
Energy intensity (TPES/GDP)	117	76	67	67	100	78	58	72	59	63	62	-2.3%
Carbon intensity: ESCII (CO ₂ /TPES)	94	94	94	101	100	101	95	93	96	89	88	-0.6%
Republic of Moldova												
CO ₂ emissions	..	..	..	..	100	39	22	25	24	26	26	-6.2%
Population	..	..	..	..	100	99	98	97	96	96	96	-0.2%
GDP per population (GDP per capita)	..	..	..	..	100	40	36	52	57	61	65	-2.0%
Energy intensity (TPES/GDP)	..	..	..	..	100	119	82	71	58	59	54	-2.9%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	82	74	72	76	76	78	-1.2%
Montenegro ***												
CO ₂ emissions	..	..	..	..	..	..	..	100	97	148	149	6.8%
Population	..	..	..	..	..	..	..	100	100	101	101	0.1%
GDP per population (GDP per capita)	..	..	..	..	..	..	..	100	121	123	127	4.1%
Energy intensity (TPES/GDP)	..	..	..	..	..	..	..	100	83	96	93	-1.2%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	..	..	..	100	96	124	124	3.7%
Romania ****												
CO ₂ emissions	61	75	94	92	89	63	46	51	42	40	44	-3.7%
Population	88	92	96	98	100	98	97	93	93	93	92	-0.4%
GDP per population (GDP per capita)	46	66	91	105	94	87	82	112	130	131	131	1.2%
Energy intensity (TPES/GDP)	151	123	107	91	95	79	66	53	42	42	43	-3.8%
Carbon intensity: ESCII (CO ₂ /TPES)	100	100	99	98	99	93	89	91	83	79	84	-0.8%
Russian Federation												
CO ₂ emissions	..	..	..	..	100	72	69	69	68	72	76	-1.3%
Population	..	..	..	..	100	100	99	97	96	96	96	-0.2%
GDP per population (GDP per capita)	..	..	..	..	100	62	68	94	108	113	117	0.8%
Energy intensity (TPES/GDP)	..	..	..	..	100	117	105	82	71	74	74	-1.4%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	99	98	94	92	91	91	-0.4%
Serbia ***												
CO ₂ emissions	..	..	..	..	100	72	69	80	74	75	81	-1.0%
Population	..	..	..	..	100	103	85	78	77	76	76	-1.3%
GDP per population (GDP per capita)	..	..	..	..	100	50	59	76	85	86	88	-0.6%
Energy intensity (TPES/GDP)	..	..	..	..	100	136	140	137	118	120	123	1.0%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	102	99	98	96	95	99	-0.1%
Tajikistan												
CO ₂ emissions	..	..	..	..	100	22	20	21	26	26	27	-6.0%
Population	..	..	..	..	100	109	116	122	128	130	132	1.3%
GDP per population (GDP per capita)	..	..	..	..	100	35	33	51	62	65	69	-1.7%
Energy intensity (TPES/GDP)	..	..	..	..	100	110	106	72	55	53	49	-3.3%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	53	49	49	59	59	61	-2.3%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

*** Serbia includes Kosovo from 1990 to 1999 & Montenegro from 1990 to 2004. The reference year for Montenegro is the first year of available data (2005).

**** The reference year for Romania corresponds to its base year under the Convention (1989).

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Turkmenistan												
CO ₂ emissions	..	..	..	..	100	75	82	108	112	127	138	1.6%
Population	..	..	..	..	100	114	123	129	136	137	139	1.6%
GDP per population (GDP per capita)	..	..	..	..	100	55	64	78	111	120	136	1.5%
Energy intensity (TPES/GDP)	..	..	..	..	100	124	108	109	75	78	74	-1.4%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	95	97	98	98	98	98	-0.1%
Ukraine												
CO ₂ emissions	..	..	..	..	100	57	42	44	37	39	41	-4.1%
Population	..	..	..	..	100	99	95	91	89	88	88	-0.6%
GDP per population (GDP per capita)	..	..	..	..	100	48	46	69	71	75	79	-1.1%
Energy intensity (TPES/GDP)	..	..	..	..	100	135	122	90	72	79	72	-1.5%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	88	80	78	81	75	83	-0.9%
Uzbekistan												
CO ₂ emissions	..	..	..	..	100	85	98	91	87	85	92	-0.4%
Population	..	..	..	..	100	111	120	128	135	139	143	1.7%
GDP per population (GDP per capita)	..	..	..	..	100	73	82	100	130	138	145	1.8%
Energy intensity (TPES/GDP)	..	..	..	..	100	113	112	79	55	49	50	-3.3%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	100	92	90	89	90	90	89	-0.5%
Non-OECD Europe and Eurasia												
CO ₂ emissions	56	72	86	90	100	67	60	63	62	66	69	-1.8%
Population	87	90	94	98	100	100	99	98	98	99	99	-0.0%
GDP per population (GDP per capita)	63	77	92	98	100	62	68	94	107	112	116	0.7%
Energy intensity (TPES/GDP)	101	98	94	94	100	112	97	76	65	67	67	-1.9%
Carbon intensity: ESCII (CO ₂ /TPES)	101	106	106	100	100	95	93	90	90	89	90	-0.5%
Algeria												
CO ₂ emissions	17	27	54	82	100	108	120	151	183	185	197	3.3%
Population	56	63	74	87	100	112	121	130	138	140	142	1.7%
GDP per population (GDP per capita)	67	89	102	110	100	91	98	115	120	122	123	1.0%
Energy intensity (TPES/GDP)	41	44	66	83	100	107	103	97	111	106	108	0.4%
Carbon intensity: ESCII (CO ₂ /TPES)	108	107	107	103	100	99	99	103	100	103	104	0.2%
Angola												
CO ₂ emissions	41	50	67	72	100	99	127	179	351	392	392	6.7%
Population	59	64	74	88	100	117	135	160	180	185	190	3.1%
GDP per population (GDP per capita)	132	121	106	97	100	68	80	108	166	167	169	2.5%
Energy intensity (TPES/GDP)	85	90	99	99	100	137	118	92	72	74	72	-1.6%
Carbon intensity: ESCII (CO ₂ /TPES)	63	71	86	85	100	91	99	113	164	173	170	2.6%
Benin												
CO ₂ emissions	119	180	154	184	100	86	556	1044	1636	1775	1844	14.9%
Population	61	67	76	87	100	118	137	160	180	185	191	3.1%
GDP per population (GDP per capita)	95	94	102	110	100	104	117	121	127	127	128	1.2%
Energy intensity (TPES/GDP)	115	119	106	97	100	90	75	78	90	93	93	-0.3%
Carbon intensity: ESCII (CO ₂ /TPES)	179	241	189	199	100	78	466	694	790	807	814	10.5%
Botswana												
CO ₂ emissions	..	..	..	54	100	114	143	151	146	171	160	2.3%
Population	..	..	..	86	100	115	127	136	143	145	147	1.9%
GDP per population (GDP per capita)	..	..	..	67	100	106	137	166	170	179	187	3.0%
Energy intensity (TPES/GDP)	..	..	..	122	100	97	83	68	66	69	64	-2.1%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	76	100	96	98	99	91	95	91	-0.4%
Cameroon												
CO ₂ emissions	27	39	62	91	100	93	104	110	179	188	191	3.1%
Population	58	64	75	86	100	114	129	144	157	161	164	2.4%
GDP per population (GDP per capita)	69	82	96	130	100	79	89	95	97	98	100	0.0%
Energy intensity (TPES/GDP)	136	115	102	79	100	121	111	102	90	88	82	-0.9%
Carbon intensity: ESCII (CO ₂ /TPES)	50	64	84	101	100	85	82	78	129	135	142	1.7%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Congo												
CO ₂ emissions	93	98	112	122	100	76	80	134	248	292	333	5.9%
Population	58	65	75	87	100	114	131	148	165	169	173	2.7%
GDP per population (GDP per capita)	63	76	83	117	100	89	88	95	101	107	108	0.4%
Energy intensity (TPES/GDP)	181	144	128	97	100	98	91	99	109	107	114	0.6%
Carbon intensity: ESCII (CO ₂ /TPES)	142	138	141	124	100	76	76	96	136	150	156	2.1%
Dem. Rep. of Congo												
CO ₂ emissions	85	87	105	109	100	71	56	77	97	104	110	0.5%
Population	57	64	74	85	100	121	136	158	176	181	186	3.0%
GDP per population (GDP per capita)	163	154	123	118	100	57	41	44	48	50	52	-3.0%
Energy intensity (TPES/GDP)	61	64	78	84	100	162	251	244	229	222	214	3.7%
Carbon intensity: ESCII (CO ₂ /TPES)	151	137	146	129	100	64	40	45	50	52	53	-3.0%
Côte d'Ivoire												
CO ₂ emissions	90	114	128	115	100	122	233	222	236	235	224	3.9%
Population	45	54	68	84	100	117	132	144	155	158	161	2.3%
GDP per population (GDP per capita)	135	141	137	113	100	92	95	87	88	89	83	-0.9%
Energy intensity (TPES/GDP)	93	90	89	91	100	109	124	178	161	162	195	3.2%
Carbon intensity: ESCII (CO ₂ /TPES)	159	167	155	135	100	103	149	100	108	104	86	-0.7%
Egypt												
CO ₂ emissions	26	33	53	83	100	106	129	195	220	228	240	4.3%
Population	65	71	79	89	100	109	119	131	140	143	145	1.8%
GDP per population (GDP per capita)	50	52	74	91	100	108	128	139	166	171	171	2.6%
Energy intensity (TPES/GDP)	75	83	80	98	100	92	83	107	95	93	97	-0.2%
Carbon intensity: ESCII (CO ₂ /TPES)	108	108	114	104	100	97	103	100	100	100	100	0.0%
Eritrea ***												
CO ₂ emissions	..	..	..	..	..	178	141	133	102	110	118	0.9%
Population	..	..	..	..	..	101	115	141	160	165	170	2.8%
GDP per population (GDP per capita)	..	..	..	..	..	140	128	132	110	109	115	0.7%
Energy intensity (TPES/GDP)	..	..	..	..	..	80	55	47	47	47	45	-4.2%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	..	157	175	153	124	129	135	1.6%
Ethiopia ***												
CO ₂ emissions	60	54	63	64	100	108	146	203	262	247	265	4.8%
Population	62	68	74	85	100	111	127	144	158	161	165	2.4%
GDP per population (GDP per capita)	128	118	112	91	100	95	103	124	169	182	191	3.1%
Energy intensity (TPES/GDP)	78	83	88	108	100	106	97	82	61	57	55	-2.8%
Carbon intensity: ESCII (CO ₂ /TPES)	98	80	86	77	100	97	114	138	160	147	154	2.1%
Gabon												
CO ₂ emissions	52	83	142	187	100	147	153	192	229	243	241	4.3%
Population	58	64	74	85	100	117	133	148	159	162	165	2.4%
GDP per population (GDP per capita)	76	141	114	110	100	99	89	87	87	91	94	-0.3%
Energy intensity (TPES/GDP)	205	122	139	122	100	99	105	113	118	114	109	0.4%
Carbon intensity: ESCII (CO ₂ /TPES)	58	76	122	163	100	128	123	132	140	144	143	1.7%
Ghana												
CO ₂ emissions	71	87	84	80	100	122	189	238	336	380	399	6.8%
Population	60	67	74	87	100	115	130	146	161	165	169	2.5%
GDP per population (GDP per capita)	136	115	109	91	100	107	118	133	154	163	182	2.9%
Energy intensity (TPES/GDP)	69	90	94	104	100	99	96	80	71	70	65	-2.0%
Carbon intensity: ESCII (CO ₂ /TPES)	126	125	110	97	100	100	129	153	191	201	200	3.4%
Kenya												
CO ₂ emissions	58	63	81	84	100	105	142	137	195	209	211	3.6%
Population	50	58	69	84	100	117	133	152	168	173	177	2.8%
GDP per population (GDP per capita)	76	86	97	91	100	93	90	95	101	105	106	0.3%
Energy intensity (TPES/GDP)	130	114	103	107	100	105	109	105	104	102	100	0.0%
Carbon intensity: ESCII (CO ₂ /TPES)	118	112	117	104	100	92	108	91	110	113	112	0.5%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

*** Data for Ethiopia include Eritrea until 1991. The reference year for Eritrea is the first year of available data (1992).

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Libya												
CO ₂ emissions	14	34	68	82	100	128	144	165	191	203	128	1.2%
Population	48	57	71	89	100	110	121	133	145	147	148	1.9%
GDP per population (GDP per capita)	253	173	219	124	100	87	84	93	102	104	40	-4.3%
Energy intensity (TPES/GDP)	12	33	40	81	100	130	140	127	123	127	202	3.4%
Carbon intensity: ESCII (CO ₂ /TPES)	97	102	110	92	100	103	101	104	105	105	107	0.3%
Morocco												
CO ₂ emissions	35	51	71	84	100	132	150	201	217	235	255	4.6%
Population	63	70	79	90	100	109	116	123	128	129	130	1.3%
GDP per population (GDP per capita)	69	75	87	90	100	96	109	131	154	159	164	2.4%
Energy intensity (TPES/GDP)	80	94	102	100	100	118	117	119	110	114	117	0.7%
Carbon intensity: ESCII (CO ₂ /TPES)	99	103	101	104	100	107	102	105	100	101	103	0.1%
Mozambique												
CO ₂ emissions	267	216	214	137	100	106	122	140	206	230	263	4.7%
Population	71	78	90	98	100	118	134	153	169	173	177	2.7%
GDP per population (GDP per capita)	161	124	110	78	100	101	127	169	199	208	218	3.8%
Energy intensity (TPES/GDP)	101	116	115	140	100	89	71	55	48	46	45	-3.8%
Carbon intensity: ESCII (CO ₂ /TPES)	229	192	188	128	100	100	100	98	128	138	153	2.0%
Namibia ***												
CO ₂ emissions	..	..	..	..	..	156	157	220	267	279	280	5.3%
Population	..	..	..	..	..	113	129	142	153	156	159	2.3%
GDP per population (GDP per capita)	..	..	..	..	..	104	108	125	135	141	144	1.8%
Energy intensity (TPES/GDP)	..	..	..	..	..	121	112	117	116	113	112	0.5%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	..	110	101	106	111	112	110	0.5%
Nigeria												
CO ₂ emissions	20	40	92	111	100	107	144	189	145	178	181	2.9%
Population	60	67	77	88	100	113	127	143	158	162	167	2.5%
GDP per population (GDP per capita)	107	111	116	88	100	100	104	123	143	151	158	2.2%
Energy intensity (TPES/GDP)	79	80	83	113	100	97	98	85	68	67	64	-2.1%
Carbon intensity: ESCII (CO ₂ /TPES)	40	68	123	128	100	97	112	126	94	109	108	0.4%
Senegal												
CO ₂ emissions	57	75	96	99	100	116	169	219	254	263	267	4.8%
Population	58	66	75	86	100	116	131	150	167	172	176	2.7%
GDP per population (GDP per capita)	112	111	104	103	100	96	103	113	116	117	117	0.8%
Energy intensity (TPES/GDP)	113	112	119	104	100	100	105	97	100	101	101	0.0%
Carbon intensity: ESCII (CO ₂ /TPES)	77	92	104	107	100	105	119	132	131	129	128	1.2%
South Africa												
CO ₂ emissions	62	79	82	90	100	108	117	130	144	146	145	1.8%
Population	64	70	78	89	100	111	125	134	140	142	144	1.7%
GDP per population (GDP per capita)	100	105	110	104	100	94	96	108	117	119	121	0.9%
Energy intensity (TPES/GDP)	78	80	84	103	100	109	100	98	95	92	89	-0.5%
Carbon intensity: ESCII (CO ₂ /TPES)	124	134	115	95	100	95	97	92	92	93	93	-0.3%
Sudan												
CO ₂ emissions	59	60	67	76	100	83	107	177	273	278	264	4.7%
Population	57	65	76	89	100	114	129	145	160	164	168	2.5%
GDP per population (GDP per capita)	105	115	103	91	100	113	136	162	203	208	213	3.7%
Energy intensity (TPES/GDP)	110	95	101	110	100	88	72	60	47	46	44	-3.9%
Carbon intensity: ESCII (CO ₂ /TPES)	90	85	85	86	100	73	85	127	178	178	169	2.5%
United Rep. of Tanzania												
CO ₂ emissions	89	88	93	89	100	148	151	295	315	342	367	6.4%
Population	55	63	73	86	100	118	134	152	171	176	181	2.9%
GDP per population (GDP per capita)	95	100	99	88	100	93	101	124	145	150	155	2.1%
Energy intensity (TPES/GDP)	148	126	114	119	100	104	102	93	80	78	76	-1.3%
Carbon intensity: ESCII (CO ₂ /TPES)	115	112	113	99	100	130	109	168	159	166	172	2.6%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

*** The reference year for Namibia is the first year of available data (1991).

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Togo												
CO ₂ emissions	60	55	64	52	100	101	168	171	200	207	219	3.8%
Population	59	65	73	86	100	111	131	148	161	164	168	2.5%
GDP per population (GDP per capita)	101	110	124	103	100	90	95	89	92	94	96	-0.2%
Energy intensity (TPES/GDP)	97	86	78	88	100	123	135	143	141	139	136	1.5%
Carbon intensity: ESCII (CO ₂ /TPES)	104	90	91	66	100	81	101	91	96	97	100	-0.0%
Tunisia												
CO ₂ emissions	30	40	65	79	100	118	149	167	176	182	175	2.7%
Population	64	69	78	89	100	110	117	123	128	129	131	1.3%
GDP per population (GDP per capita)	60	75	90	97	100	110	135	160	186	189	184	2.9%
Energy intensity (TPES/GDP)	87	85	94	97	100	97	93	86	78	80	80	-1.1%
Carbon intensity: ESCII (CO ₂ /TPES)	91	90	98	94	100	100	101	99	95	93	91	-0.4%
Zambia												
CO ₂ emissions	132	169	129	108	100	79	65	80	64	67	81	-1.0%
Population	54	62	73	86	100	113	130	146	162	164	171	2.6%
GDP per population (GDP per capita)	145	142	123	107	100	82	82	93	106	112	115	0.7%
Energy intensity (TPES/GDP)	82	82	92	99	100	116	108	99	85	81	80	-1.1%
Carbon intensity: ESCII (CO ₂ /TPES)	203	234	155	118	100	73	57	60	44	45	51	-3.1%
Zimbabwe												
CO ₂ emissions	45	45	50	60	100	93	79	64	50	54	59	-2.5%
Population	51	59	70	85	100	112	119	120	119	120	122	0.9%
GDP per population (GDP per capita)	101	102	93	95	100	95	100	68	55	60	65	-2.0%
Energy intensity (TPES/GDP)	113	105	107	100	100	100	89	129	143	134	127	1.1%
Carbon intensity: ESCII (CO ₂ /TPES)	77	71	71	75	100	88	74	62	53	56	59	-2.5%
Other Africa												
CO ₂ emissions	52	64	91	81	100	116	136	165	191	206	216	3.7%
Population	61	67	77	87	100	110	127	146	164	169	173	2.7%
GDP per population (GDP per capita)	113	110	108	100	100	92	101	118	129	132	135	1.4%
Energy intensity (TPES/GDP)	92	94	94	101	100	111	102	88	82	80	79	-1.1%
Carbon intensity: ESCII (CO ₂ /TPES)	83	93	115	92	100	103	105	109	110	116	118	0.8%
Africa												
CO ₂ emissions	46	60	74	87	100	110	125	152	170	178	178	2.8%
Population	60	66	76	87	100	113	128	144	158	161	165	2.4%
GDP per population (GDP per capita)	96	99	107	101	100	94	100	113	126	129	128	1.2%
Energy intensity (TPES/GDP)	87	88	87	100	100	105	100	95	87	85	85	-0.8%
Carbon intensity: ESCII (CO ₂ /TPES)	91	103	104	100	100	97	98	99	99	101	100	-0.0%
Bangladesh												
CO ₂ emissions	23	34	53	65	100	151	187	271	370	393	399	6.8%
Population	64	67	77	88	100	112	123	134	140	141	143	1.7%
GDP per population (GDP per capita)	94	84	91	95	100	111	130	156	190	199	210	3.6%
Energy intensity (TPES/GDP)	74	93	95	94	100	101	91	90	86	86	82	-0.9%
Carbon intensity: ESCII (CO ₂ /TPES)	53	65	80	83	100	121	128	145	162	163	162	2.3%
Brunei Darussalam												
CO ₂ emissions	12	43	81	90	100	138	136	148	228	244	274	4.9%
Population	52	62	75	87	100	115	130	144	156	158	161	2.3%
GDP per population (GDP per capita)	116	119	160	115	100	101	96	96	90	90	91	-0.5%
Energy intensity (TPES/GDP)	17	58	65	104	100	111	111	93	127	131	152	2.0%
Carbon intensity: ESCII (CO ₂ /TPES)	120	101	104	88	100	106	99	116	130	130	124	1.0%
Cambodia ***												
CO ₂ emissions	..	..	..	..	..	100	134	180	248	256	275	6.5%
Population	..	..	..	..	..	100	111	120	125	127	128	1.6%
GDP per population (GDP per capita)	..	..	..	..	..	100	128	186	232	243	257	6.1%
Energy intensity (TPES/GDP)	..	..	..	..	..	100	85	54	60	58	57	-3.4%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	..	..	100	111	149	143	145	146	2.4%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

*** The reference year for Cambodia is the first year of available data (1995).

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Chinese Taipei												
CO ₂ emissions	27	37	64	62	100	138	191	230	219	236	231	4.1%
Population	74	80	88	95	100	105	109	112	113	114	115	0.7%
GDP per population (GDP per capita)	25	35	54	69	100	135	167	195	213	234	244	4.3%
Energy intensity (TPES/GDP)	113	107	121	105	100	93	97	97	88	85	80	-1.1%
Carbon intensity: ESCII (CO ₂ /TPES)	131	125	110	91	100	105	108	108	103	104	103	0.1%
India												
CO ₂ emissions	34	41	49	71	100	133	167	200	282	294	300	5.4%
Population	65	71	80	90	100	110	121	130	138	140	142	1.7%
GDP per population (GDP per capita)	68	70	73	83	100	116	142	183	232	251	265	4.7%
Energy intensity (TPES/GDP)	112	112	111	107	100	95	84	71	69	65	63	-2.2%
Carbon intensity: ESCII (CO ₂ /TPES)	70	74	75	88	100	110	116	117	128	129	127	1.1%
Indonesia												
CO ₂ emissions	17	26	47	60	100	147	187	230	260	281	292	5.2%
Population	66	73	82	91	100	108	116	123	129	130	131	1.3%
GDP per population (GDP per capita)	41	51	66	78	100	135	131	154	184	193	204	3.4%
Energy intensity (TPES/GDP)	131	113	105	94	100	91	104	96	85	85	79	-1.1%
Carbon intensity: ESCII (CO ₂ /TPES)	48	62	83	90	100	111	119	126	128	131	138	1.5%
DPR of Korea												
CO ₂ emissions	59	67	93	111	100	66	60	65	58	56	57	-2.7%
Population	73	80	86	93	100	108	114	118	120	121	121	0.9%
GDP per population (GDP per capita)	27	38	61	90	100	73	61	62	62	56	57	-2.7%
Energy intensity (TPES/GDP)	301	220	174	129	100	84	85	88	79	84	83	-0.9%
Carbon intensity: ESCII (CO ₂ /TPES)	101	100	101	102	100	99	101	101	100	99	99	-0.0%
Malaysia												
CO ₂ emissions	26	32	49	68	100	167	227	304	339	369	391	6.7%
Population	61	68	76	87	100	114	129	143	153	156	158	2.2%
GDP per population (GDP per capita)	45	55	74	83	100	138	155	175	189	199	206	3.5%
Energy intensity (TPES/GDP)	102	92	99	100	100	100	110	118	112	108	108	0.4%
Carbon intensity: ESCII (CO ₂ /TPES)	90	95	89	94	100	106	104	103	104	110	111	0.5%
Mongolia												
CO ₂ emissions	..	..	..	92	100	79	70	75	93	100	103	0.1%
Population	..	..	..	88	100	105	110	116	124	126	128	1.2%
GDP per population (GDP per capita)	..	..	..	95	100	83	91	118	142	149	172	2.6%
Energy intensity (TPES/GDP)	..	..	..	110	100	91	70	56	54	54	48	-3.4%
Carbon intensity: ESCII (CO ₂ /TPES)	..	..	..	100	100	100	99	97	97	98	97	-0.1%
Myanmar												
CO ₂ emissions	113	99	128	145	100	169	231	260	172	198	204	3.4%
Population	68	75	84	92	100	107	114	118	121	122	123	1.0%
GDP per population (GDP per capita)	85	86	105	121	100	123	173	308	414	432	453	7.5%
Energy intensity (TPES/GDP)	127	121	100	92	100	84	61	38	27	25	24	-6.6%
Carbon intensity: ESCII (CO ₂ /TPES)	152	126	145	141	100	153	192	188	129	151	155	2.1%
Nepal												
CO ₂ emissions	21	36	58	62	100	197	346	343	386	458	459	7.5%
Population	64	70	79	89	100	113	128	143	154	157	160	2.3%
GDP per population (GDP per capita)	79	80	80	90	100	114	127	134	148	152	155	2.1%
Energy intensity (TPES/GDP)	125	124	125	110	100	90	86	82	76	74	72	-1.5%
Carbon intensity: ESCII (CO ₂ /TPES)	34	51	74	70	100	170	247	218	224	260	256	4.6%
Pakistan												
CO ₂ emissions	28	36	45	67	100	136	169	206	238	231	233	4.1%
Population	55	61	72	85	100	114	129	142	152	155	158	2.2%
GDP per population (GDP per capita)	63	66	76	88	100	110	114	132	145	148	150	1.9%
Energy intensity (TPES/GDP)	115	118	106	100	100	100	102	95	88	86	84	-0.8%
Carbon intensity: ESCII (CO ₂ /TPES)	71	75	77	89	100	109	113	116	123	117	117	0.8%
Philippines												
CO ₂ emissions	60	76	87	74	100	150	177	185	185	200	202	3.4%
Population	59	66	76	88	100	112	125	139	149	151	154	2.1%
GDP per population (GDP per capita)	85	95	111	90	100	99	106	120	132	140	143	1.7%
Energy intensity (TPES/GDP)	107	101	93	105	100	105	105	82	68	67	64	-2.1%
Carbon intensity: ESCII (CO ₂ /TPES)	113	119	111	90	100	128	127	137	139	141	143	1.7%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Singapore												
CO ₂ emissions	21	29	43	55	100	141	162	169	190	219	220	3.8%
Population	69	74	79	90	100	116	132	140	164	167	170	2.6%
GDP per population (GDP per capita)	32	42	60	74	100	130	151	180	183	207	212	3.7%
Energy intensity (TPES/GDP)	106	103	94	89	100	108	81	76	82	86	80	-1.0%
Carbon intensity: ESCII (CO ₂ /TPES)	88	89	97	94	100	87	100	89	77	73	76	-1.3%
Sri Lanka												
CO ₂ emissions	74	72	99	95	100	148	285	359	318	351	401	6.8%
Population	75	79	87	93	100	107	112	115	120	121	123	1.0%
GDP per population (GDP per capita)	59	65	77	91	100	122	148	175	212	227	243	4.3%
Energy intensity (TPES/GDP)	158	145	124	107	100	83	91	81	65	65	63	-2.1%
Carbon intensity: ESCII (CO ₂ /TPES)	107	97	121	105	100	137	188	220	193	197	212	3.7%
Thailand												
CO ₂ emissions	20	26	42	52	100	174	192	262	269	294	302	5.4%
Population	67	74	83	92	100	105	111	117	120	121	122	0.9%
GDP per population (GDP per capita)	38	43	56	67	100	145	140	170	182	195	194	3.2%
Energy intensity (TPES/GDP)	129	129	112	96	100	98	111	119	117	119	120	0.9%
Carbon intensity: ESCII (CO ₂ /TPES)	62	64	80	88	100	118	112	111	105	105	106	0.3%
Vietnam												
CO ₂ emissions	94	97	86	100	100	162	256	464	662	753	799	10.4%
Population	66	73	81	89	100	109	118	125	130	132	133	1.4%
GDP per population (GDP per capita)	81	75	71	89	100	136	177	239	301	318	333	5.9%
Energy intensity (TPES/GDP)	138	143	140	113	100	83	77	78	76	79	77	-1.2%
Carbon intensity: ESCII (CO ₂ /TPES)	127	125	107	111	100	132	159	200	221	228	233	4.1%
Other Asia												
CO ₂ emissions	82	100	161	99	100	91	107	150	186	215	230	4.0%
Population	71	76	81	88	100	85	96	108	119	122	125	1.1%
GDP per population (GDP per capita)	93	99	107	104	100	150	145	183	225	244	262	4.7%
Energy intensity (TPES/GDP)	80	83	128	101	100	78	86	70	60	60	58	-2.6%
Carbon intensity: ESCII (CO ₂ /TPES)	156	159	144	106	100	91	90	109	115	121	122	0.9%
Asia												
CO ₂ emissions	34	42	56	72	100	134	167	205	251	266	272	4.9%
Population	65	71	80	90	100	110	120	130	137	139	141	1.7%
GDP per population (GDP per capita)	56	61	72	82	100	120	134	163	193	207	216	3.7%
Energy intensity (TPES/GDP)	123	118	112	106	100	94	92	84	79	77	74	-1.4%
Carbon intensity: ESCII (CO ₂ /TPES)	77	81	86	92	100	108	112	115	120	121	121	0.9%
People's Rep. of China												
CO ₂ emissions	36	48	63	77	100	135	147	241	303	323	354	6.2%
Population	74	81	86	93	100	106	111	115	117	118	118	0.8%
GDP per population (GDP per capita)	33	37	48	74	100	168	242	374	564	620	674	9.5%
Energy intensity (TPES/GDP)	187	185	167	116	100	67	49	48	40	40	39	-4.4%
Carbon intensity: ESCII (CO ₂ /TPES)	81	86	92	97	100	112	111	118	115	112	113	0.6%
Hong Kong, China												
CO ₂ emissions	28	33	44	67	100	110	121	124	139	126	137	1.5%
Population	71	78	89	96	100	108	117	119	123	124	124	1.0%
GDP per population (GDP per capita)	31	38	59	72	100	120	126	152	168	177	186	3.0%
Energy intensity (TPES/GDP)	156	141	102	110	100	95	105	81	84	73	75	-1.4%
Carbon intensity: ESCII (CO ₂ /TPES)	80	78	83	88	100	89	78	85	80	79	80	-1.1%
China (incl. Hong Kong)												
CO ₂ emissions	36	47	63	77	100	134	147	239	300	320	351	6.2%
Population	74	81	86	93	100	106	111	115	117	118	118	0.8%
GDP per population (GDP per capita)	32	37	49	74	100	163	231	352	525	577	626	9.1%
Energy intensity (TPES/GDP)	188	185	162	116	100	69	52	50	42	42	42	-4.0%
Carbon intensity: ESCII (CO ₂ /TPES)	81	85	92	97	100	112	110	118	115	111	113	0.6%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Argentina												
CO ₂ emissions	83	86	96	88	100	118	139	152	172	178	184	2.9%
Population	75	80	86	93	100	107	113	119	123	124	125	1.1%
GDP per population (GDP per capita)	123	127	135	110	100	129	138	145	178	193	208	3.5%
Energy intensity (TPES/GDP)	79	77	78	88	100	85	85	84	76	71	67	-1.9%
Carbon intensity: ESCII (CO ₂ /TPES)	113	110	105	98	100	101	105	105	104	105	106	0.3%
Bolivia												
CO ₂ emissions	42	62	81	83	100	134	138	183	247	273	296	5.3%
Population	65	72	80	89	100	112	125	137	147	149	152	2.0%
GDP per population (GDP per capita)	109	125	123	100	100	109	116	123	138	141	146	1.8%
Energy intensity (TPES/GDP)	55	64	95	108	100	117	99	118	117	133	133	1.4%
Carbon intensity: ESCII (CO ₂ /TPES)	108	110	87	86	100	94	97	92	104	97	100	0.0%
Brazil												
CO ₂ emissions	47	71	92	85	100	122	158	168	176	202	212	3.6%
Population	66	72	81	91	100	108	117	124	129	130	131	1.3%
GDP per population (GDP per capita)	64	86	105	99	100	108	110	119	132	141	143	1.7%
Energy intensity (TPES/GDP)	117	105	95	102	100	99	104	104	101	103	102	0.1%
Carbon intensity: ESCII (CO ₂ /TPES)	94	109	114	93	100	107	118	109	103	106	110	0.5%
Colombia												
CO ₂ emissions	58	61	76	86	100	126	128	126	134	135	144	1.8%
Population	66	72	81	90	100	110	120	130	138	139	141	1.7%
GDP per population (GDP per capita)	66	75	87	87	100	112	109	120	136	139	145	1.8%
Energy intensity (TPES/GDP)	131	118	104	105	100	93	82	72	68	69	64	-2.1%
Carbon intensity: ESCII (CO ₂ /TPES)	101	96	104	104	100	111	120	112	106	101	111	0.5%
Costa Rica												
CO ₂ emissions	48	67	84	77	100	169	171	219	241	251	257	4.6%
Population	61	67	76	88	100	113	128	140	150	152	154	2.1%
GDP per population (GDP per capita)	79	91	102	89	100	116	130	145	162	168	172	2.6%
Energy intensity (TPES/GDP)	100	98	96	96	100	107	103	113	112	109	105	0.2%
Carbon intensity: ESCII (CO ₂ /TPES)	101	113	112	102	100	121	100	95	89	91	93	-0.4%
Cuba												
CO ₂ emissions	60	70	89	94	100	66	80	74	94	87	83	-0.9%
Population	84	89	93	95	100	103	105	106	107	107	106	0.3%
GDP per population (GDP per capita)	57	64	72	106	100	67	82	104	129	134	140	1.6%
Energy intensity (TPES/GDP)	128	119	126	87	100	90	84	55	51	45	43	-4.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	103	105	107	100	105	110	122	134	136	131	1.3%
Dominican Republic												
CO ₂ emissions	47	70	85	83	100	151	231	234	245	247	244	4.3%
Population	64	72	81	90	100	110	119	129	136	138	140	1.6%
GDP per population (GDP per capita)	68	86	98	97	100	117	151	166	206	219	226	4.0%
Energy intensity (TPES/GDP)	130	123	106	97	100	101	102	78	61	58	57	-2.6%
Carbon intensity: ESCII (CO ₂ /TPES)	81	92	101	98	100	116	126	139	144	140	135	1.4%
Ecuador												
CO ₂ emissions	28	46	82	91	100	120	135	188	236	242	241	4.3%
Population	60	67	78	89	100	111	120	131	139	141	143	1.7%
GDP per population (GDP per capita)	74	94	105	99	100	103	99	120	130	133	141	1.7%
Energy intensity (TPES/GDP)	86	85	105	110	100	102	112	120	120	113	110	0.4%
Carbon intensity: ESCII (CO ₂ /TPES)	72	86	96	95	100	103	101	99	109	114	109	0.4%
El Salvador												
CO ₂ emissions	64	90	78	79	100	207	233	280	276	262	270	4.8%
Population	72	79	87	94	100	108	111	113	116	116	117	0.7%
GDP per population (GDP per capita)	120	131	119	96	100	126	141	155	161	163	164	2.4%
Energy intensity (TPES/GDP)	82	88	98	118	100	101	102	104	92	90	91	-0.4%
Carbon intensity: ESCII (CO ₂ /TPES)	90	98	77	74	100	152	145	154	162	154	154	2.1%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Guatemala												
CO ₂ emissions	71	95	132	100	100	181	264	327	347	321	325	5.8%
Population	63	70	79	89	100	112	126	143	157	161	165	2.4%
GDP per population (GDP per capita)	89	99	116	97	100	110	119	122	128	129	131	1.3%
Energy intensity (TPES/GDP)	111	109	94	99	100	98	107	102	105	112	107	0.3%
Carbon intensity: ESCII (CO ₂ /TPES)	115	125	153	117	100	150	165	184	164	138	141	1.7%
Haiti												
CO ₂ emissions	40	43	65	83	100	96	149	210	240	216	226	4.0%
Population	67	72	80	90	100	111	121	131	138	140	142	1.7%
GDP per population (GDP per capita)	110	109	130	113	100	79	82	74	77	71	74	-1.4%
Energy intensity (TPES/GDP)	131	140	129	119	100	124	130	171	165	154	194	3.2%
Carbon intensity: ESCII (CO ₂ /TPES)	41	39	49	69	100	88	116	127	137	140	110	0.4%
Honduras												
CO ₂ emissions	52	61	78	77	100	164	206	322	339	338	354	6.2%
Population	57	63	74	86	100	114	127	141	152	155	159	2.2%
GDP per population (GDP per capita)	86	88	106	99	100	104	109	123	131	132	134	1.4%
Energy intensity (TPES/GDP)	121	116	100	98	100	100	91	97	93	93	93	-0.3%
Carbon intensity: ESCII (CO ₂ /TPES)	89	94	99	91	100	138	164	192	181	176	178	2.8%
Jamaica												
CO ₂ emissions	77	103	91	65	100	116	135	143	104	100	106	0.3%
Population	79	84	89	97	100	104	108	111	113	113	113	0.6%
GDP per population (GDP per capita)	107	108	86	81	100	117	110	118	117	116	117	0.8%
Energy intensity (TPES/GDP)	85	106	107	79	100	95	115	102	82	77	83	-0.9%
Carbon intensity: ESCII (CO ₂ /TPES)	106	107	111	104	100	101	98	107	96	98	96	-0.2%
Netherlands Antilles												
CO ₂ emissions	525	369	318	166	100	103	162	170	201	158	187	3.0%
Population	85	89	92	97	100	105	111	116	120	121	121	0.9%
GDP per population (GDP per capita)	72	78	88	88	100	106	123	125	128	129	130	1.3%
Energy intensity (TPES/GDP)	610	378	336	144	100	80	106	99	103	82	109	0.4%
Carbon intensity: ESCII (CO ₂ /TPES)	140	140	118	135	100	114	112	118	127	124	109	0.4%
Nicaragua												
CO ₂ emissions	80	100	98	98	100	137	192	220	227	246	247	4.4%
Population	60	68	79	90	100	113	123	132	139	140	142	1.7%
GDP per population (GDP per capita)	191	209	146	132	100	97	113	124	131	133	138	1.5%
Energy intensity (TPES/GDP)	53	52	66	81	100	102	89	86	79	78	77	-1.3%
Carbon intensity: ESCII (CO ₂ /TPES)	133	136	128	103	100	122	154	157	158	168	165	2.4%
Panama												
CO ₂ emissions	99	122	114	105	100	161	193	267	304	329	366	6.4%
Population	64	71	81	90	100	111	122	134	143	146	148	1.9%
GDP per population (GDP per capita)	99	102	108	115	100	118	134	151	196	208	227	4.0%
Energy intensity (TPES/GDP)	174	155	109	101	100	103	105	96	80	82	81	-1.0%
Carbon intensity: ESCII (CO ₂ /TPES)	89	108	121	100	100	120	112	138	135	132	135	1.4%
Paraguay												
CO ₂ emissions	30	36	71	74	100	180	170	180	216	245	256	4.6%
Population	60	66	75	87	100	113	126	139	149	152	155	2.1%
GDP per population (GDP per capita)	57	68	101	95	100	107	95	95	101	113	119	0.8%
Energy intensity (TPES/GDP)	130	107	89	89	100	106	105	97	97	91	86	-0.7%
Carbon intensity: ESCII (CO ₂ /TPES)	67	75	104	101	100	141	136	140	148	157	162	2.3%
Peru												
CO ₂ emissions	81	96	107	95	100	124	138	150	199	217	233	4.1%
Population	63	70	80	90	100	110	119	127	133	134	136	1.5%
GDP per population (GDP per capita)	126	139	136	123	100	119	124	143	178	191	202	3.4%
Energy intensity (TPES/GDP)	119	110	107	99	100	86	85	77	75	77	77	-1.2%
Carbon intensity: ESCII (CO ₂ /TPES)	86	90	93	87	100	110	110	107	113	110	110	0.5%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Trinidad and Tobago												
CO ₂ emissions	54	51	70	84	100	108	185	298	353	376	359	6.3%
Population	80	83	89	97	100	104	106	108	110	110	111	0.5%
GDP per population (GDP per capita)	94	103	141	116	100	103	128	185	215	214	205	3.5%
Energy intensity (TPES/GDP)	58	45	51	76	100	96	133	141	143	151	154	2.1%
Carbon intensity: ESCII (CO ₂ /TPES)	123	132	109	99	100	105	102	106	104	105	103	0.1%
Uruguay												
CO ₂ emissions	139	146	148	83	100	121	140	141	204	171	202	3.4%
Population	91	91	94	97	100	104	106	106	108	108	108	0.4%
GDP per population (GDP per capita)	82	88	107	85	100	117	132	133	160	173	182	2.9%
Energy intensity (TPES/GDP)	144	135	117	107	100	94	98	93	107	99	100	-0.0%
Carbon intensity: ESCII (CO ₂ /TPES)	130	134	126	94	100	106	102	107	111	92	103	0.1%
Venezuela												
CO ₂ emissions	50	60	88	91	100	113	121	141	160	173	152	2.0%
Population	56	64	76	88	100	112	123	135	144	146	148	1.9%
GDP per population (GDP per capita)	128	127	121	100	100	106	100	104	118	115	118	0.8%
Energy intensity (TPES/GDP)	63	70	88	103	100	100	105	110	94	104	92	-0.4%
Carbon intensity: ESCII (CO ₂ /TPES)	110	104	108	100	100	95	93	92	100	100	94	-0.3%
Other Non-OECD Americas												
CO ₂ emissions	63	87	82	74	100	108	121	129	139	151	158	2.2%
Population	87	89	93	96	100	106	112	120	124	126	127	1.1%
GDP per population (GDP per capita)	63	62	80	82	100	101	115	121	121	122	115	0.7%
Energy intensity (TPES/GDP)	176	222	165	102	100	100	91	89	93	98	106	0.3%
Carbon intensity: ESCII (CO ₂ /TPES)	65	71	67	92	100	101	102	100	99	101	102	0.1%
Non-OECD Americas												
CO ₂ emissions	60	73	91	88	100	118	141	156	173	186	188	3.1%
Population	66	73	82	91	100	109	118	126	132	133	135	1.4%
GDP per population (GDP per capita)	83	97	110	100	100	110	113	122	139	146	151	2.0%
Energy intensity (TPES/GDP)	106	99	95	99	100	95	97	96	90	91	88	-0.6%
Carbon intensity: ESCII (CO ₂ /TPES)	104	106	108	97	100	104	109	106	105	105	106	0.3%
Bahrain												
CO ₂ emissions	26	45	63	89	100	99	121	155	192	197	194	3.2%
Population	45	54	73	85	100	113	129	147	237	256	269	4.8%
GDP per population (GDP per capita)	64	98	118	94	100	122	133	157	123	119	116	0.7%
Energy intensity (TPES/GDP)	114	93	75	120	100	82	79	73	74	71	70	-1.7%
Carbon intensity: ESCII (CO ₂ /TPES)	79	93	98	93	100	88	90	92	90	91	89	-0.6%
Islamic Republic of Iran												
CO ₂ emissions	23	40	50	82	100	141	176	236	288	284	292	5.2%
Population	54	60	70	85	100	109	119	127	133	135	136	1.5%
GDP per population (GDP per capita)	124	157	116	117	100	109	121	149	169	177	178	2.8%
Energy intensity (TPES/GDP)	36	41	67	79	100	124	123	131	137	128	126	1.1%
Carbon intensity: ESCII (CO ₂ /TPES)	97	104	92	106	100	96	99	95	93	94	95	-0.2%
Iraq												
CO ₂ emissions	19	29	51	69	100	182	132	140	168	190	203	3.4%
Population	57	65	76	86	100	115	134	152	171	176	181	2.9%
GDP per population (GDP per capita)	269	301	387	217	100	33	59	38	42	41	44	-3.9%
Energy intensity (TPES/GDP)	14	16	17	37	100	458	167	236	234	268	259	4.6%
Carbon intensity: ESCII (CO ₂ /TPES)	93	94	103	98	100	104	100	103	101	99	99	-0.0%
Jordan												
CO ₂ emissions	14	23	46	80	100	132	155	195	209	203	214	3.7%
Population	50	57	69	83	100	132	151	171	187	191	195	3.2%
GDP per population (GDP per capita)	81	69	119	127	100	107	109	132	159	159	160	2.3%
Energy intensity (TPES/GDP)	37	58	57	75	100	93	90	91	77	71	69	-1.7%
Carbon intensity: ESCII (CO ₂ /TPES)	96	100	99	100	100	100	105	96	92	94	99	-0.0%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

CO₂ emissions and drivers (Kaya decomposition) *

reference year for indices = 1990 unless otherwise specified

	1971	1975	1980	1985	1990	1995	2000	2005	2009	2010	2011	avg. ch. ref-11**
Kuwait												
CO ₂ emissions	49	52	93	129	100	126	171	244	278	284	295	5.3%
Population	39	50	66	83	100	78	93	108	127	131	135	1.4%
GDP per population (GDP per capita)	324	206	167	104	100	174	160	204	191	190	200	3.4%
Energy intensity (TPES/GDP)	53	68	104	177	100	120	139	131	140	143	132	1.3%
Carbon intensity: ESCII (CO ₂ /TPES)	73	74	81	84	100	77	83	84	82	79	83	-0.9%
Lebanon												
CO ₂ emissions	83	103	121	120	100	235	259	265	354	336	339	6.0%
Population	86	94	95	98	100	117	127	137	142	143	144	1.8%
GDP per population (GDP per capita)	176	158	132	180	100	151	150	167	207	220	225	3.9%
Energy intensity (TPES/GDP)	63	75	101	68	100	127	132	112	115	104	100	0.0%
Carbon intensity: ESCII (CO ₂ /TPES)	88	93	95	101	100	104	103	103	104	103	104	0.2%
Oman												
CO ₂ emissions	2	7	22	56	100	144	197	276	526	557	620	9.1%
Population	41	48	63	82	100	119	121	130	145	149	152	2.0%
GDP per population (GDP per capita)	62	68	67	104	100	111	130	144	165	167	173	2.6%
Energy intensity (TPES/GDP)	22	17	64	58	100	109	122	137	181	220	228	4.0%
Carbon intensity: ESCII (CO ₂ /TPES)	46	123	80	111	100	100	103	108	121	102	104	0.2%
Qatar												
CO ₂ emissions	16	34	54	86	100	132	168	255	394	444	500	8.0%
Population	25	34	47	78	100	106	125	173	337	371	395	6.8%
GDP per population (GDP per capita)	411	301	257	131	100	105	157	168	159	169	189	3.1%
Energy intensity (TPES/GDP)	14	30	42	85	100	113	85	88	71	71	69	-1.8%
Carbon intensity: ESCII (CO ₂ /TPES)	110	110	106	99	100	106	101	100	103	100	98	-0.1%
Saudi Arabia												
CO ₂ emissions	8	14	63	78	100	130	159	207	256	279	290	5.2%
Population	37	46	61	82	100	115	124	149	166	170	174	2.7%
GDP per population (GDP per capita)	98	168	176	103	100	101	105	106	104	106	111	0.5%
Energy intensity (TPES/GDP)	34	19	49	91	100	127	130	155	170	178	162	2.3%
Carbon intensity: ESCII (CO ₂ /TPES)	66	97	121	101	100	89	94	85	87	87	93	-0.4%
Syrian Arab Republic												
CO ₂ emissions	21	32	47	75	100	116	141	195	203	204	189	3.1%
Population	53	61	72	86	100	115	130	150	163	166	169	2.5%
GDP per population (GDP per capita)	64	95	111	108	100	127	127	139	158	160	154	2.1%
Energy intensity (TPES/GDP)	66	50	53	80	100	79	92	95	79	78	74	-1.5%
Carbon intensity: ESCII (CO ₂ /TPES)	94	110	109	100	100	101	94	98	100	99	99	-0.1%
United Arab Emirates												
CO ₂ emissions	5	9	37	69	100	134	165	209	290	303	320	5.7%
Population	15	30	56	75	100	130	168	225	384	415	436	7.3%
GDP per population (GDP per capita)	116	153	168	118	100	93	94	91	62	58	58	-2.6%
Energy intensity (TPES/GDP)	28	21	38	76	100	113	105	103	126	129	129	1.2%
Carbon intensity: ESCII (CO ₂ /TPES)	95	99	104	102	100	99	99	99	98	98	99	-0.1%
Yemen												
CO ₂ emissions	19	27	54	75	100	145	205	290	345	369	322	5.7%
Population	52	56	66	82	100	127	148	173	195	201	208	3.5%
GDP per population (GDP per capita)	46	60	89	104	100	106	117	123	125	131	114	0.6%
Energy intensity (TPES/GDP)	122	81	85	82	100	101	109	123	126	126	122	1.0%
Carbon intensity: ESCII (CO ₂ /TPES)	63	98	106	108	100	107	109	111	112	111	111	0.5%
Middle East												
CO ₂ emissions	18	29	55	80	100	139	164	214	268	279	289	5.2%
Population	51	58	70	84	100	114	127	143	158	162	165	2.4%
GDP per population (GDP per capita)	125	159	169	124	100	98	108	120	128	131	135	1.4%
Energy intensity (TPES/GDP)	32	31	45	76	100	132	123	135	142	143	137	1.5%
Carbon intensity: ESCII (CO ₂ /TPES)	88	99	103	101	100	95	97	93	93	92	95	-0.3%

* Please see Part I, Chapter 1 for methodological notes.

** Average annual percentage change between the reference year and 2011. The reference year is 1990 unless otherwise specified.

GLOBAL AND REGIONAL TOTALS

World

Figure 1. CO₂ emissions by fuel

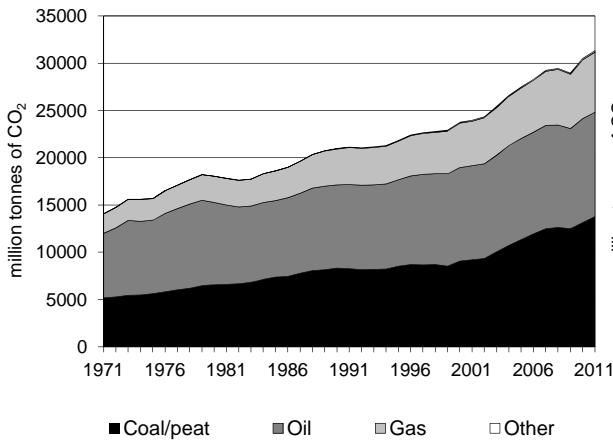


Figure 2. CO₂ emissions by sector

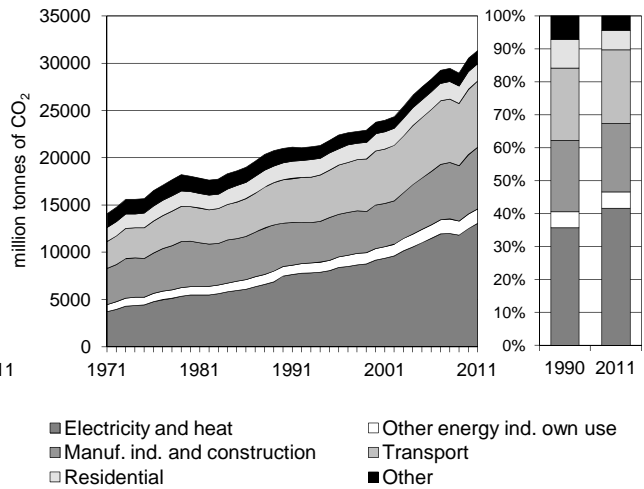


Figure 3. Reference vs Sectoral Approach

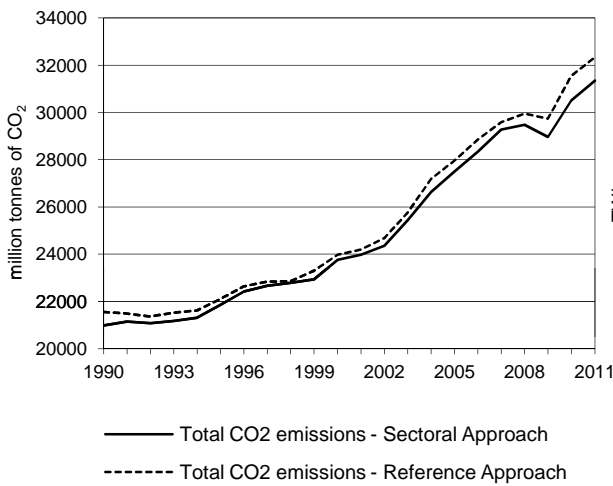


Figure 4. Electricity generation by fuel

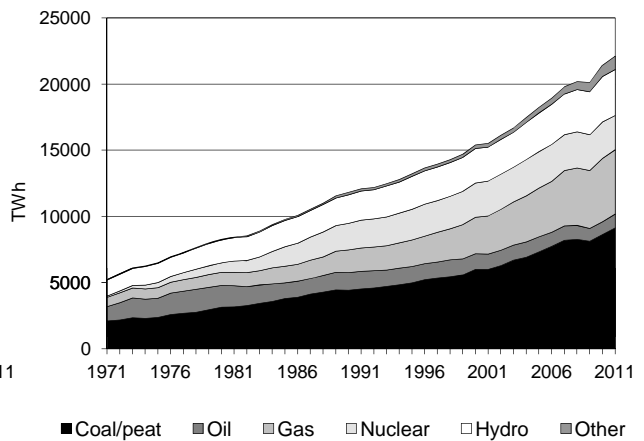


Figure 5. Changes in selected indicators *

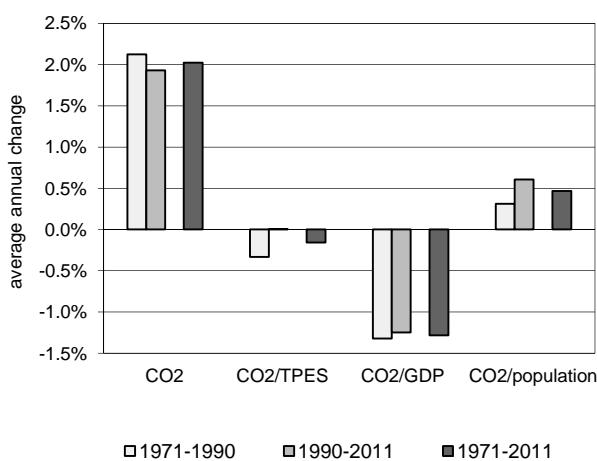
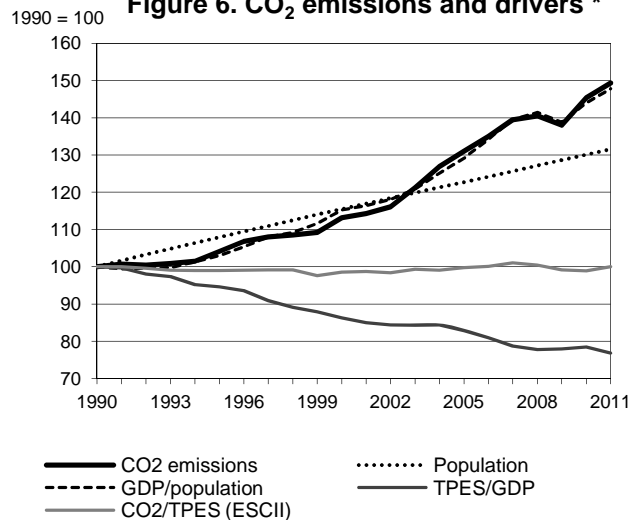


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

World

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	20 988.7	21 851.0	23 758.6	27 501.4	28 966.4	30 509.4	31 342.3	49.3%
TPES (PJ)	367 681	386 762	422 125	482 823	511 536	540 299	549 031	49.3%
GDP (billion 2005 USD)	30 249.8	33 550.5	39 708.0	45 674.2	49 080.0	51 052.1	52 485.9	73.5%
GDP PPP (billion 2005 USD)	36 173.4	40 210.4	48 150.8	57 343.2	64 565.9	67 779.1	70 313.0	94.4%
Population (millions)	5 288.9	5 706.6	6 108.3	6 491.3	6 801.6	6 880.1	6 958.0	31.6%
CO ₂ / TPES (tCO ₂ per TJ)	57.1	56.5	56.3	57.0	56.6	56.5	57.1	0.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.69	0.65	0.60	0.60	0.59	0.60	0.60	-13.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.58	0.54	0.49	0.48	0.45	0.45	0.45	-23.2%
CO ₂ / population (tCO ₂ per capita)	3.97	3.83	3.89	4.24	4.26	4.43	4.50	13.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	104	113	131	138	145	149	49.3%
Population	100	108	115	123	129	130	132	31.6%
GDP per population (GDP per capita)	100	103	115	129	139	144	148	47.7%
Energy intensity (TPES/GDP)	100	95	86	83	78	78	77	-23.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	99	99	100	99	99	100	0.0%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach ***	13 773.1	11 071.7	6 334.8	162.7	31 342.3	49.3%
Main activity producer elec. and heat	8 933.9	726.2	2 194.0	44.7	11 898.9	79.9%
Unallocated autoproducers	504.9	165.4	429.1	68.5	1 167.9	31.7%
Other energy industry own use	298.0	628.8	615.4	0.7	1 542.9	53.2%
Manufacturing industries and construction	3 515.0	1 496.1	1 454.0	43.6	6 508.7	42.7%
Transport ***	13.3	6 771.6	216.2	-	7 001.1	52.3%
<i>of which: road</i>	-	5 097.0	75.0	-	5 172.0	57.0%
Other	508.1	1 283.5	1 426.1	5.2	3 222.9	-3.0%
<i>of which: residential</i>	301.9	578.9	970.8	0.0	1 851.6	1.9%
Reference Approach ***	14 704.0	11 081.5	6 383.3	162.8	32 331.6	50.1%
Diff. due to losses and/or transformation	365.9	43.9	72.6	0.1	482.5	
Statistical differences	564.9	- 34.1	- 24.1	0.0	506.8	
<i>Memo: international marine bunkers</i>	0.0	645.1	-	-	645.1	78.1%
<i>Memo: international aviation bunkers</i>	-	468.5	-	-	468.5	82.7%

** Other includes industrial waste and non-renewable municipal waste.

*** World includes international marine bunkers and international aviation bunkers.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ****	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	8 933.9	96.3%	19.6	19.6
Road - oil	5 097.0	55.0%	11.2	30.7
Manufacturing industries - coal/peat	3 515.0	58.3%	7.7	38.4
Main activity prod. elec. and heat - gas	2 194.0	112.9%	4.8	43.2
Other transport - oil	1 674.5	48.7%	3.7	46.9
Manufacturing industries - oil	1 496.1	10.6%	3.3	50.1
Manufacturing industries - gas	1 454.0	48.1%	3.2	53.3
Residential - gas	970.8	51.5%	2.1	55.4
Main activity prod. elec. and heat - oil	726.2	-29.4%	1.6	57.0
<i>Memo: total CO₂ from fuel combustion</i>	31 342.3	49.3%	68.6	68.6

**** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Annex I Parties

Figure 1. CO₂ emissions by fuel

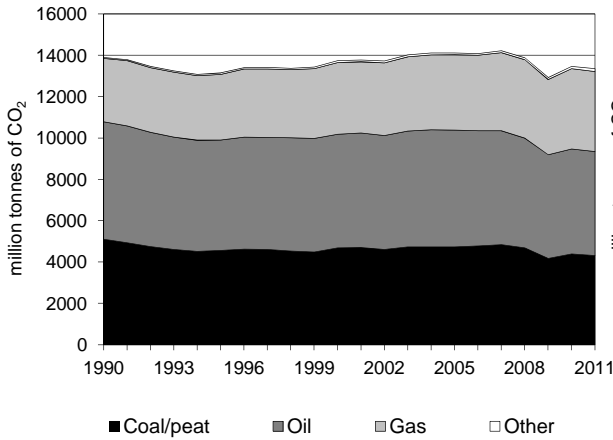


Figure 2. CO₂ emissions by sector

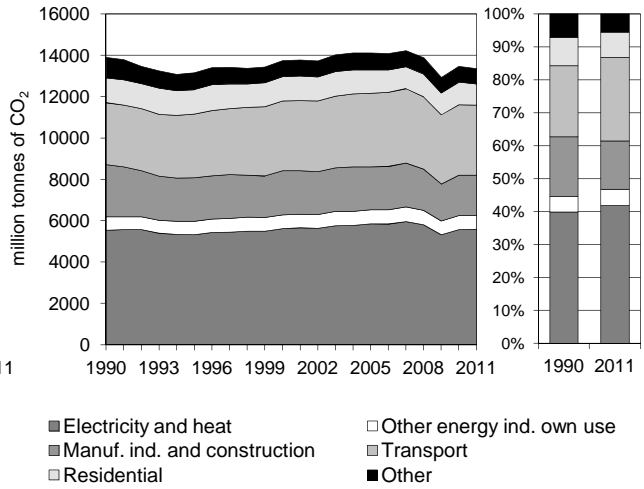


Figure 3. Reference vs Sectoral Approach

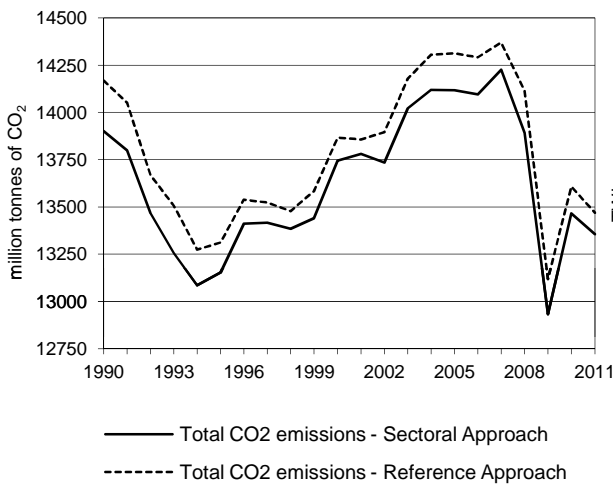


Figure 4. Electricity generation by fuel

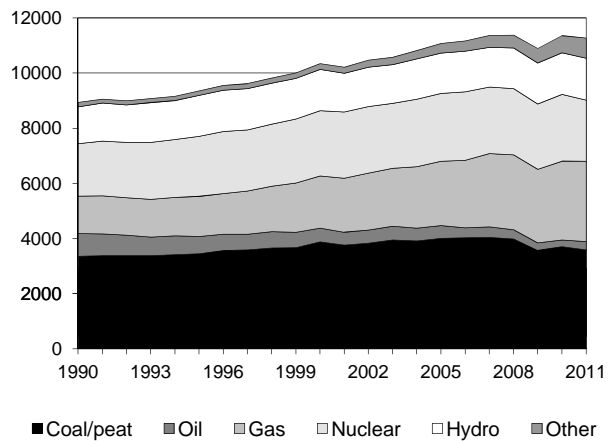


Figure 5. Changes in selected indicators *

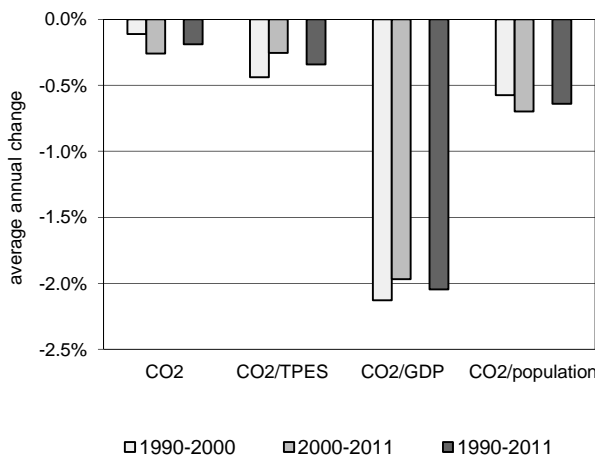
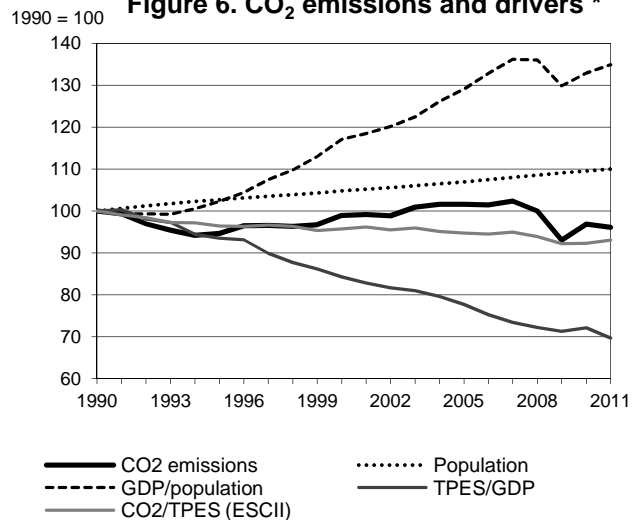


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Annex I Parties

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	13 900.6	13 152.4	13 744.5	14 117.5	12 932.6	13 465.9	13 354.9	-3.9%
TPES (PJ)	233 718	229 470	241 486	250 691	235 796	245 328	241 338	3.3%
GDP (billion 2005 USD)	24 965.9	26 926.6	31 427.1	35 006.6	35 653.1	36 625.7	37 229.7	49.1%
GDP PPP (billion 2005 USD)	25 364.9	26 638.3	31 100.5	35 011.7	35 904.9	36 915.1	37 604.3	48.3%
Population (millions)	1 175.8	1 207.3	1 231.6	1 257.5	1 281.9	1 287.8	1 292.7	9.9%
CO ₂ / TPES (tCO ₂ per TJ)	59.5	57.3	56.9	56.3	54.8	54.9	55.3	-7.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.56	0.49	0.44	0.40	0.36	0.37	0.36	-35.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.55	0.49	0.44	0.40	0.36	0.36	0.36	-35.2%
CO ₂ / population (tCO ₂ per capita)	11.82	10.89	11.16	11.23	10.09	10.46	10.33	-12.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	95	99	102	93	97	96	-3.9%
Population	100	103	105	107	109	110	110	9.9%
GDP per population (GDP per capita)	100	102	117	129	130	133	135	34.8%
Energy intensity (TPES/GDP)	100	93	84	78	71	72	70	-30.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	96	96	95	92	92	93	-7.0%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	4 315.2	5 030.8	3 882.3	126.6	13 354.9	-3.9%
Main activity producer elec. and heat	3 364.5	173.1	1 317.7	43.7	4 899.0	2.5%
Unallocated autoproducers	240.4	76.5	331.3	42.3	690.5	-10.1%
Other energy industry own use	71.9	354.5	236.5	0.7	663.6	1.9%
Manufacturing industries and construction	534.6	596.9	788.8	36.7	1 956.9	-22.5%
Transport	0.7	3 251.2	134.7	-	3 386.6	13.3%
<i>of which: road</i>	-	2 907.1	5.2	-	2 912.3	19.6%
Other	103.1	578.7	1 073.3	3.2	1 758.3	-19.7%
<i>of which: residential</i>	70.9	242.1	705.3	0.0	1 018.3	-15.1%
Reference Approach	4 451.9	5 000.8	3 888.9	126.6	13 468.2	-4.9%
Diff. due to losses and/or transformation	86.6	- 32.9	28.0	0.1	81.7	
Statistical differences	50.2	2.9	- 21.3	- 0.1	31.7	
<i>Memo: international marine bunkers</i>	0.0	265.3	-	-	265.3	13.7%
<i>Memo: international aviation bunkers</i>	-	258.8	-	-	258.8	53.5%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	3 364.5	0.9%	19.3	19.3
Road - oil	2 907.1	19.5%	16.7	36.1
Main activity prod. elec. and heat - gas	1 317.7	62.8%	7.6	43.6
Manufacturing industries - gas	788.8	2.7%	4.5	48.2
Residential - gas	705.3	17.6%	4.1	52.2
Manufacturing industries - oil	596.9	-26.8%	3.4	55.7
Manufacturing industries - coal/peat	534.6	-42.9%	3.1	58.7
Non-specified other - gas	368.1	27.6%	2.1	60.9
Other energy industry own use - oil	354.5	-11.0%	2.0	62.9
<i>Memo: total CO₂ from fuel combustion</i>	<i>13 354.9</i>	<i>-3.9%</i>	<i>76.8</i>	<i>76.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Annex II Parties

Figure 1. CO₂ emissions by fuel

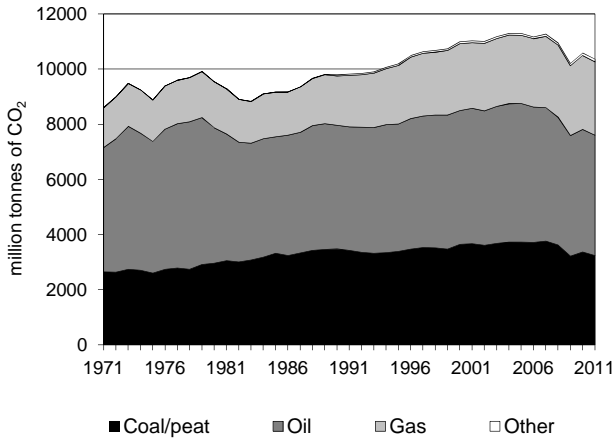


Figure 2. CO₂ emissions by sector

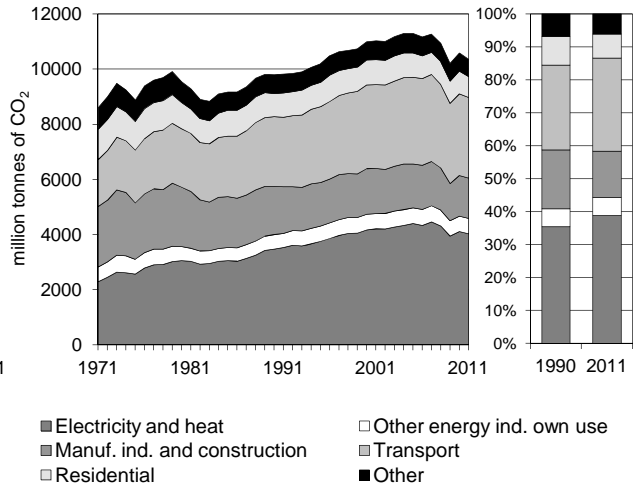


Figure 3. Reference vs Sectoral Approach

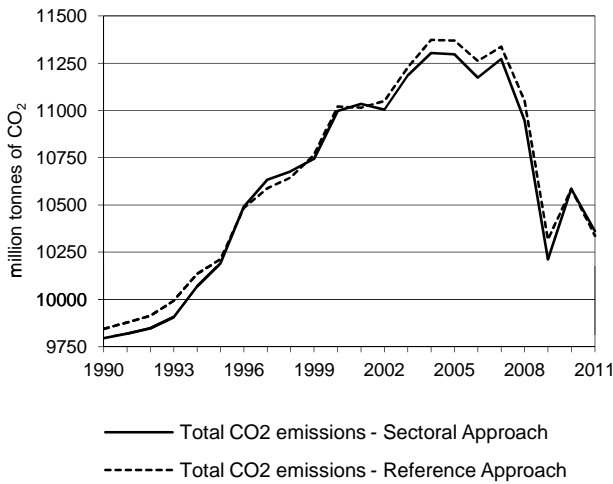


Figure 4. Electricity generation by fuel

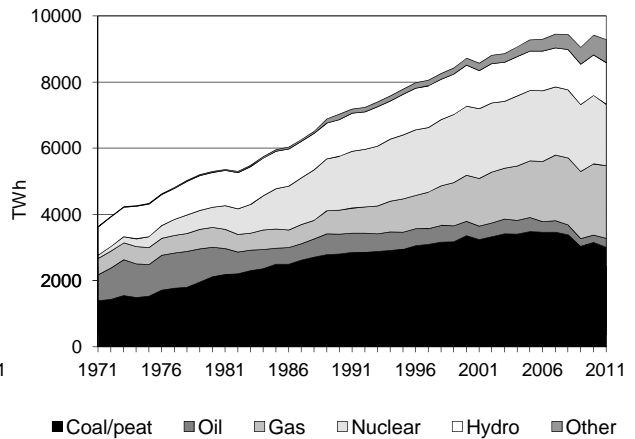


Figure 5. Changes in selected indicators *

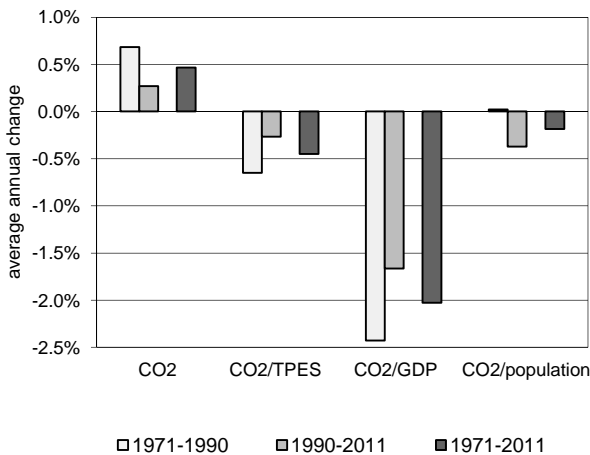
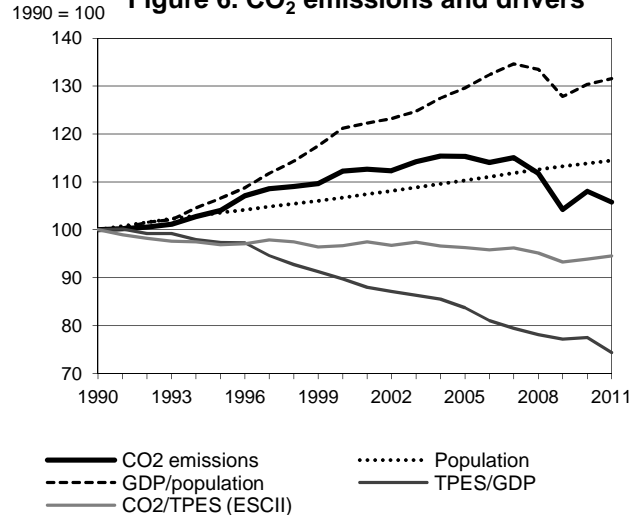


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Annex II Parties

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	9 794.8	10 191.9	10 996.5	11 296.4	10 211.3	10 586.0	10 363.0	5.8%
TPES (PJ)	167 905	180 349	194 911	201 128	187 637	193 272	187 944	11.9%
GDP (billion 2005 USD)	23 054.9	25 407.7	29 690.2	32 780.8	33 165.6	34 022.5	34 502.8	49.7%
GDP PPP (billion 2005 USD)	21 453.2	23 673.0	27 753.9	30 682.4	31 056.6	31 845.4	32 298.0	50.6%
Population (millions)	799.3	827.7	853.1	881.8	905.5	910.3	914.7	14.4%
CO ₂ / TPES (tCO ₂ per TJ)	58.3	56.5	56.4	56.2	54.4	54.8	55.1	-5.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.42	0.40	0.37	0.34	0.31	0.31	0.30	-29.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.46	0.43	0.40	0.37	0.33	0.33	0.32	-29.7%
CO ₂ / population (tCO ₂ per capita)	12.25	12.31	12.89	12.81	11.28	11.63	11.33	-7.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	104	112	115	104	108	106	5.8%
Population	100	104	107	110	113	114	114	14.4%
GDP per population (GDP per capita)	100	107	121	130	128	130	132	31.6%
Energy intensity (TPES/GDP)	100	97	90	84	77	78	74	-25.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	97	97	96	93	94	95	-5.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	3 240.4	4 363.2	2 657.9	101.5	10 363.0	5.8%
Main activity producer elec. and heat	2 714.4	141.9	843.4	42.9	3 742.6	17.7%
Unallocated autoproducers	107.3	43.5	110.3	25.5	286.6	-2.1%
Other energy industry own use	51.8	299.6	205.8	-	557.2	5.2%
Manufacturing industries and construction	344.3	510.1	580.0	30.6	1 465.0	-16.2%
Transport	0.5	2 873.3	50.3	-	2 924.1	15.8%
<i>of which: road</i>	-	2 574.1	4.6	-	2 578.7	20.9%
Other	22.2	494.8	868.0	2.5	1 387.5	-8.7%
<i>of which: residential</i>	11.3	217.6	529.7	0.0	758.6	-10.0%
Reference Approach	3 297.9	4 293.8	2 643.2	101.5	10 336.4	5.0%
Diff. due to losses and/or transformation	37.4	- 67.1	7.5	0.0	- 22.1	
Statistical differences	20.1	- 2.3	- 22.2	- 0.1	- 4.4	
<i>Memo: international marine bunkers</i>	0.0	248.8	-	-	248.8	11.5%
<i>Memo: international aviation bunkers</i>	-	230.6	-	-	230.6	75.7%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	2 714.4	7.7%	20.9	20.9
Road - oil	2 574.1	20.7%	19.8	40.7
Main activity prod. elec. and heat - gas	843.4	179.0%	6.5	47.1
Manufacturing industries - gas	580.0	10.8%	4.5	51.6
Residential - gas	529.7	18.9%	4.1	55.7
Manufacturing industries - oil	510.1	-15.3%	3.9	59.6
Manufacturing industries - coal/peat	344.3	-44.4%	2.6	62.2
Non-specified other - gas	338.3	36.2%	2.6	64.8
Other energy industry own use - oil	299.6	-9.2%	2.3	67.2
<i>Memo: total CO₂ from fuel combustion</i>	<i>10 363.0</i>	<i>5.8%</i>	<i>79.7</i>	<i>79.7</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Annex II: North America

Figure 1. CO₂ emissions by fuel

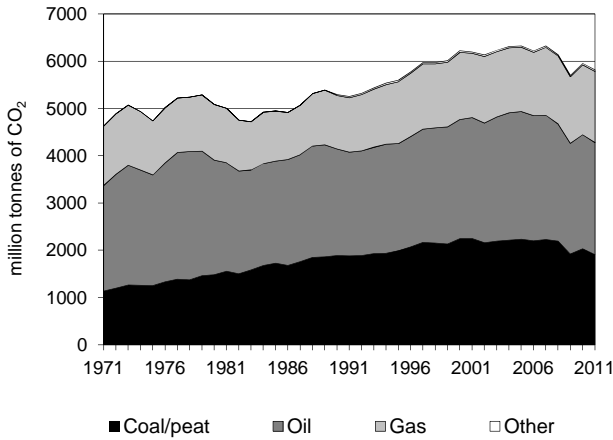


Figure 2. CO₂ emissions by sector

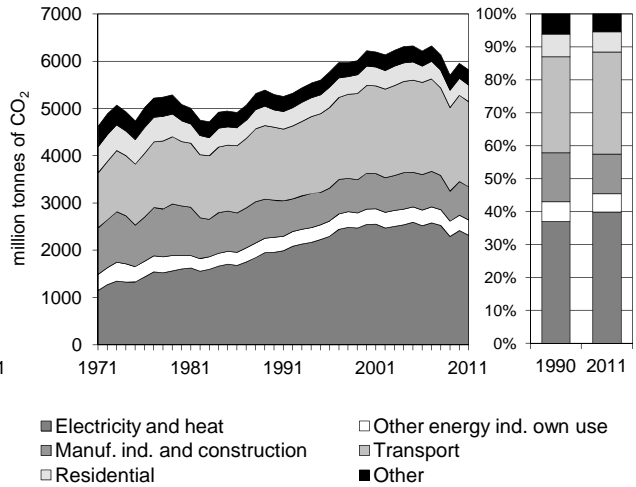


Figure 3. Reference vs Sectoral Approach

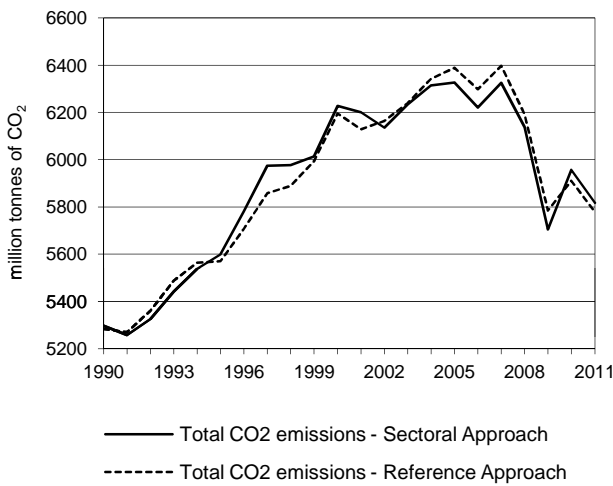


Figure 4. Electricity generation by fuel

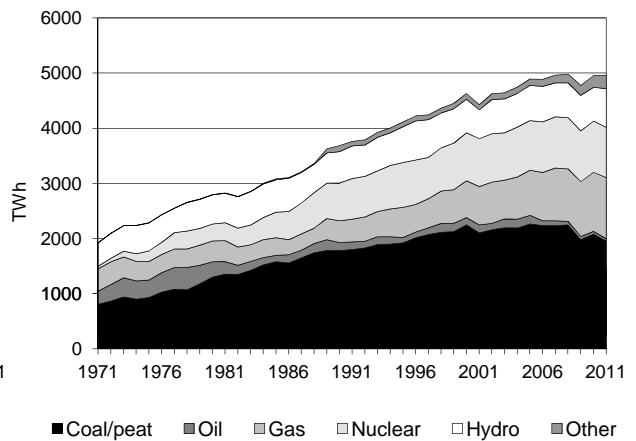


Figure 5. Changes in selected indicators *

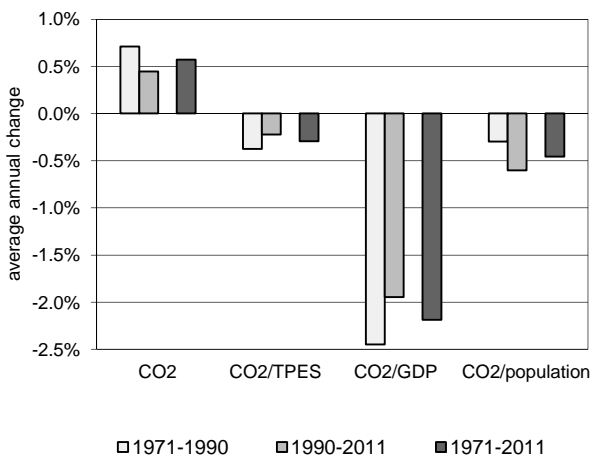
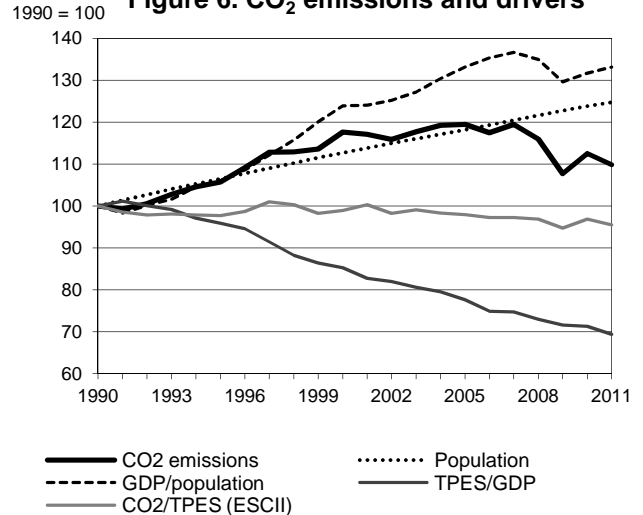


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Annex II: North America

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	5 296.9	5 599.6	6 227.7	6 326.9	5 704.4	5 957.3	5 817.0	9.8%
TPES (PJ)	88 909	96 212	105 708	108 483	101 144	103 267	102 285	15.0%
GDP (billion 2005 USD)	8 712.5	9 836.6	12 158.0	13 698.1	13 856.4	14 195.9	14 460.7	66.0%
GDP PPP (billion 2005 USD)	8 711.3	9 835.3	12 156.5	13 696.3	13 854.6	14 194.0	14 458.8	66.0%
Population (millions)	277.9	295.9	313.1	328.2	341.0	343.9	346.5	24.7%
CO ₂ / TPES (tCO ₂ per TJ)	59.6	58.2	58.9	58.3	56.4	57.7	56.9	-4.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.61	0.57	0.51	0.46	0.41	0.42	0.40	-33.8%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.61	0.57	0.51	0.46	0.41	0.42	0.40	-33.8%
CO ₂ / population (tCO ₂ per capita)	19.06	18.92	19.89	19.28	16.73	17.32	16.79	-11.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	106	118	119	108	112	110	9.8%
Population	100	106	113	118	123	124	125	24.7%
GDP per population (GDP per capita)	100	106	124	133	130	132	133	33.1%
Energy intensity (TPES/GDP)	100	96	85	78	72	71	69	-30.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	98	99	98	95	97	95	-4.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	1 914.4	2 364.4	1 506.5	31.7	5 817.0	9.8%
Main activity producer elec. and heat	1 766.0	30.3	433.1	15.5	2 244.9	20.3%
Unallocated autoproducers	19.6	6.7	41.4	7.3	74.9	-21.4%
Other energy industry own use	9.7	166.9	147.2	-	323.9	2.7%
Manufacturing industries and construction	113.9	222.0	355.3	8.2	699.3	-11.3%
Transport	-	1 759.7	44.5	-	1 804.1	16.9%
<i>of which: road</i>	-	1 543.1	1.8	-	1 544.9	25.2%
Other	5.2	178.8	485.2	0.8	670.0	-2.6%
<i>of which: residential</i>	0.1	65.2	289.5	-	354.8	-2.7%
Reference Approach	1 953.4	2 278.1	1 515.0	31.7	5 778.2	9.4%
Diff. due to losses and/or transformation	17.9	- 83.7	3.9	-	- 61.9	
Statistical differences	21.1	- 2.6	4.5	-	23.0	
<i>Memo: international marine bunkers</i>	-	85.1	-	-	85.1	-9.0%
<i>Memo: international aviation bunkers</i>	-	68.3	-	-	68.3	64.6%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	1 766.0	9.5%	24.3	24.3
Road - oil	1 543.1	25.1%	21.2	45.5
Main activity prod. elec. and heat - gas	433.1	178.3%	6.0	51.5
Manufacturing industries - gas	355.3	9.9%	4.9	56.4
Residential - gas	289.5	8.8%	4.0	60.4
Manufacturing industries - oil	222.0	-8.5%	3.1	63.4
Other transport - oil	216.6	-19.1%	3.0	66.4
Non-specified other - gas	195.6	19.5%	2.7	69.1
Other energy industry own use - oil	166.9	-10.9%	2.3	71.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>5 817.0</i>	<i>9.8%</i>	<i>80.0</i>	<i>80.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Annex II: Europe

Figure 1. CO₂ emissions by fuel

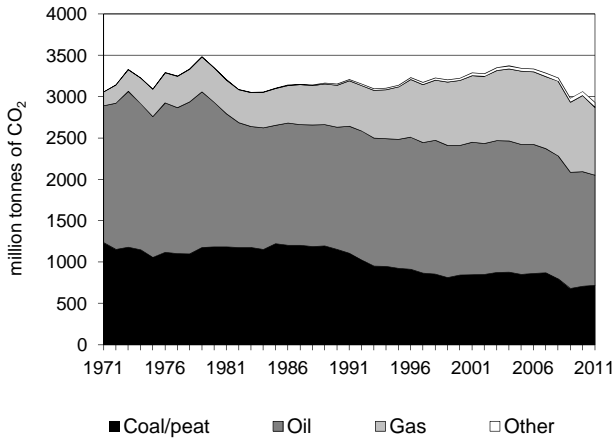


Figure 2. CO₂ emissions by sector

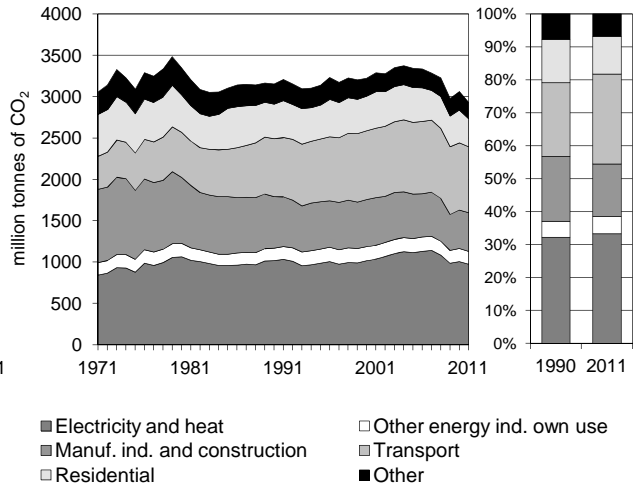


Figure 3. Reference vs Sectoral Approach

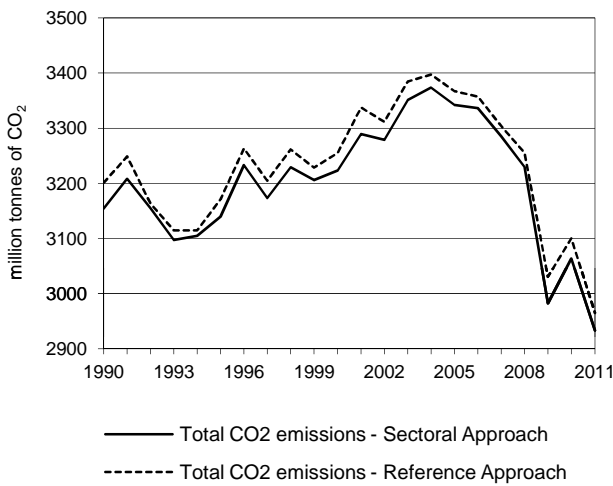


Figure 4. Electricity generation by fuel

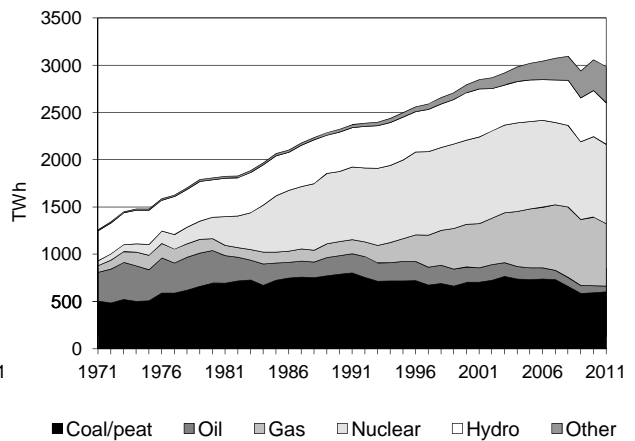


Figure 5. Changes in selected indicators *

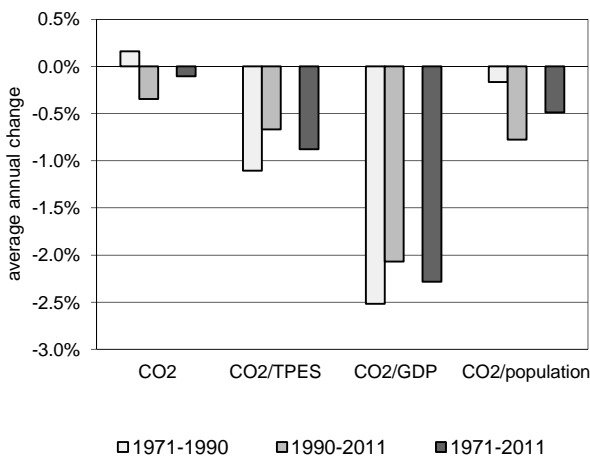
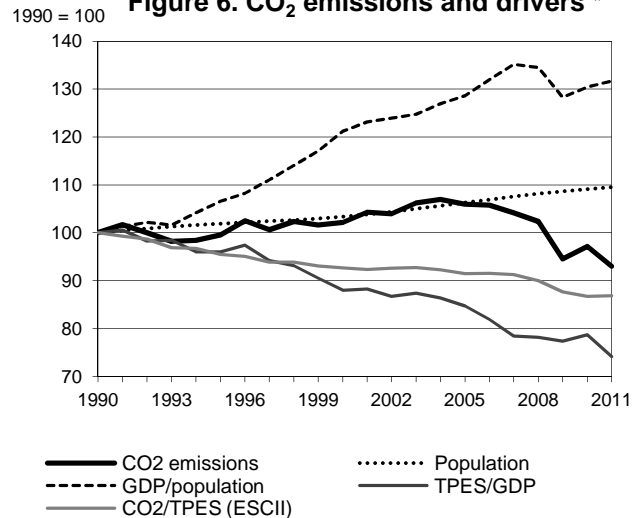


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Annex II: Europe

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	3 154.1	3 139.7	3 223.3	3 342.4	2 982.1	3 063.6	2 932.8	-7.0%
TPES (PJ)	56 453	58 860	62 235	65 394	60 880	63 214	60 433	7.1%
GDP (billion 2005 USD)	9 970.4	10 827.0	12 490.1	13 638.0	13 900.2	14 190.0	14 401.5	44.4%
GDP PPP (billion 2005 USD)	8 975.3	9 746.5	11 241.7	12 275.3	12 513.0	12 766.8	12 948.4	44.3%
Population (millions)	377.3	384.4	389.9	401.1	410.0	411.5	413.2	9.5%
CO ₂ / TPES (tCO ₂ per TJ)	55.9	53.3	51.8	51.1	49.0	48.5	48.5	-13.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.32	0.29	0.26	0.25	0.21	0.22	0.20	-35.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.35	0.32	0.29	0.27	0.24	0.24	0.23	-35.5%
CO ₂ / population (tCO ₂ per capita)	8.36	8.17	8.27	8.33	7.27	7.44	7.10	-15.1%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	100	102	106	95	97	93	-7.0%
Population	100	102	103	106	109	109	110	9.5%
GDP per population (GDP per capita)	100	107	121	129	128	130	132	31.7%
Energy intensity (TPES/GDP)	100	96	88	85	77	79	74	-25.8%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	93	91	88	87	87	-13.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	721.9	1 328.9	820.6	61.5	2 932.8	-7.0%
Main activity producer elec. and heat	552.9	33.8	228.4	25.4	840.6	-4.6%
Unallocated autoproducers	41.6	20.4	57.7	15.5	135.3	-0.6%
Other energy industry own use	21.1	98.1	36.8	-	156.0	1.5%
Manufacturing industries and construction	91.8	171.8	182.8	18.8	465.1	-25.3%
Transport	0.0	796.1	4.7	-	800.8	14.2%
<i>of which: road</i>	-	748.6	2.6	-	751.2	15.3%
Other	14.4	208.7	310.1	1.8	535.0	-18.9%
<i>of which: residential</i>	11.1	114.7	211.0	0.0	336.8	-19.1%
Reference Approach	730.4	1 348.3	824.8	61.5	2 964.9	-7.4%
Diff. due to losses and/or transformation	8.8	15.1	6.4	-	30.2	
Statistical differences	-0.3	4.3	-2.2	-0.0	1.8	
<i>Memo: international marine bunkers</i>	-	147.6	-	-	147.6	35.7%
<i>Memo: international aviation bunkers</i>	-	131.4	-	-	131.4	85.7%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	748.6	15.0%	19.8	19.8
Main activity prod. elec. and heat - coal/peat	552.9	-20.7%	14.6	34.4
Main activity prod. elec. and heat - gas	228.4	284.0%	6.0	40.4
Residential - gas	211.0	34.1%	5.6	46.0
Manufacturing industries - gas	182.8	4.9%	4.8	50.9
Manufacturing industries - oil	171.8	-19.3%	4.5	55.4
Residential - oil	114.7	-37.8%	3.0	58.4
Non-specified other - gas	99.1	34.7%	2.6	61.0
Other energy industry own use - oil	98.1	-7.6%	2.6	63.6
<i>Memo: total CO₂ from fuel combustion</i>	<i>2 932.8</i>	<i>-7.0%</i>	<i>77.5</i>	<i>77.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Annex II: Asia Oceania

Figure 1. CO₂ emissions by fuel

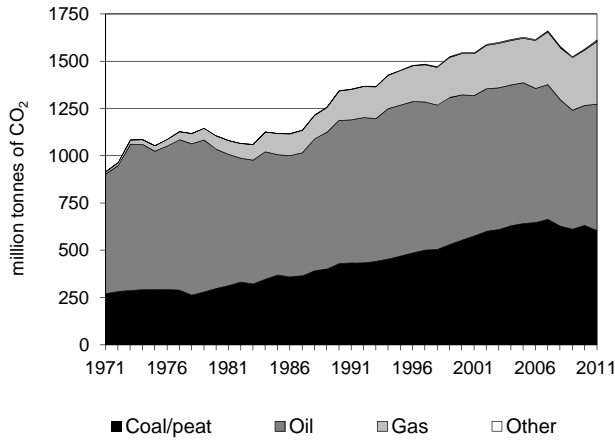


Figure 2. CO₂ emissions by sector

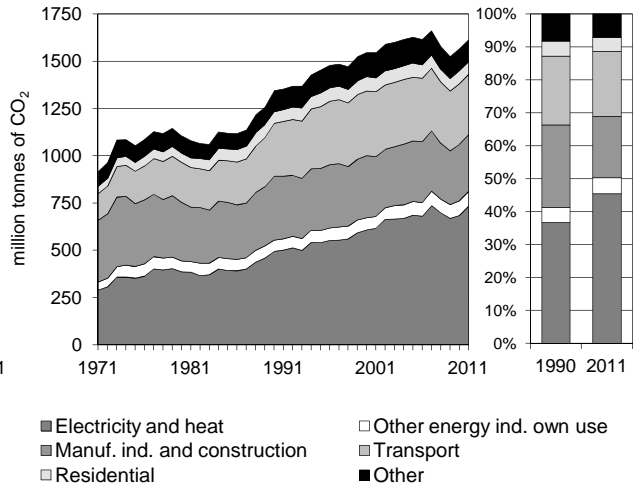


Figure 3. Reference vs Sectoral Approach

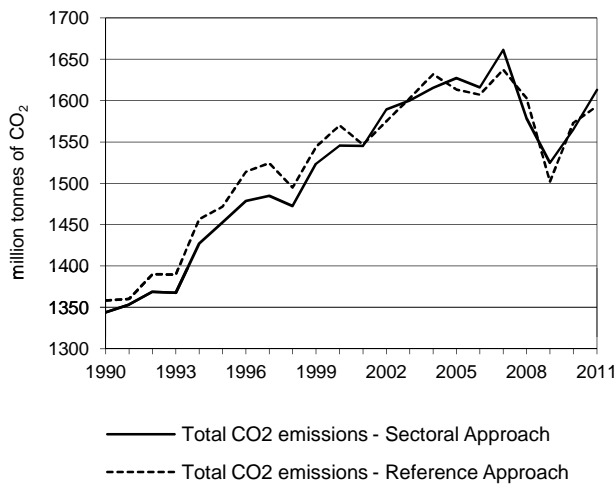


Figure 4. Electricity generation by fuel

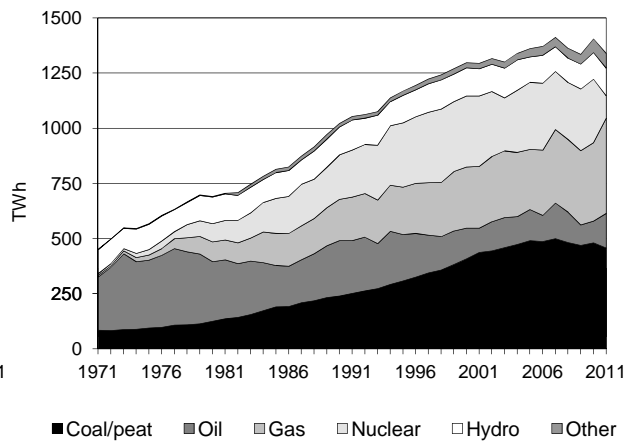


Figure 5. Changes in selected indicators *

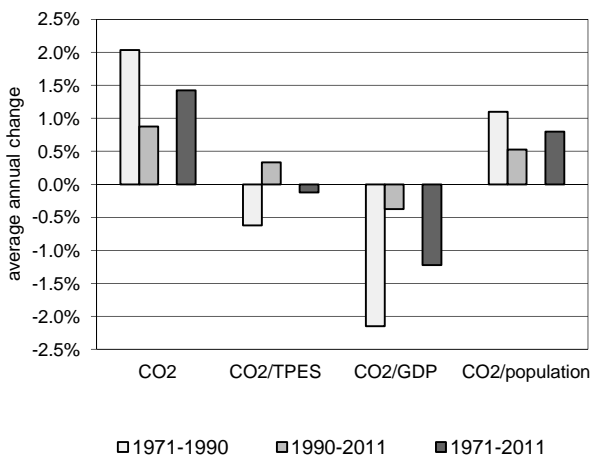
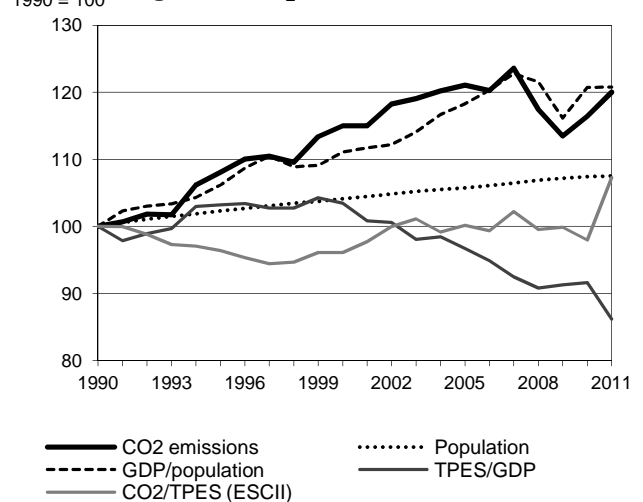


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Annex II: Asia Oceania

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	1 343.9	1 452.6	1 545.5	1 627.1	1 524.8	1 565.0	1 613.1	20.0%
TPES (PJ)	22 543	25 276	26 968	27 251	25 613	26 791	25 226	11.9%
GDP (billion 2005 USD)	4 372.1	4 744.1	5 042.0	5 444.8	5 409.0	5 636.6	5 640.6	29.0%
GDP PPP (billion 2005 USD)	3 766.5	4 091.2	4 355.7	4 710.9	4 689.0	4 884.6	4 890.8	29.9%
Population (millions)	144.2	147.5	150.1	152.4	154.5	154.9	155.0	7.5%
CO ₂ / TPES (tCO ₂ per TJ)	59.6	57.5	57.3	59.7	59.5	58.4	63.9	7.3%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.31	0.31	0.31	0.30	0.28	0.28	0.29	-7.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.36	0.36	0.35	0.35	0.33	0.32	0.33	-7.6%
CO ₂ / population (tCO ₂ per capita)	9.32	9.85	10.30	10.67	9.87	10.11	10.41	11.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	108	115	121	113	116	120	20.0%
Population	100	102	104	106	107	107	107	7.5%
GDP per population (GDP per capita)	100	106	111	118	116	121	121	20.8%
Energy intensity (TPES/GDP)	100	103	103	97	91	92	86	-13.8%
Carbon intensity: ESCII (CO ₂ /TPES)	100	96	96	100	100	98	107	7.3%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	604.0	669.9	330.8	8.4	1 613.1	20.0%
Main activity producer elec. and heat	395.4	77.8	181.9	1.9	657.1	52.0%
Unallocated autoproducers	46.1	16.3	11.3	2.8	76.4	24.4%
Other energy industry own use	20.9	34.6	21.8	-	77.3	28.0%
Manufacturing industries and construction	138.6	116.3	42.0	3.7	300.6	-10.9%
Transport	0.5	317.6	1.1	-	319.2	14.1%
<i>of which: road</i>	-	282.4	0.1	-	282.5	13.6%
Other	2.6	107.2	72.7	-	182.5	5.8%
<i>of which: residential</i>	0.1	37.8	29.1	-	67.0	8.1%
Reference Approach	614.1	667.4	303.5	8.4	1 593.3	17.3%
Diff. due to losses and/or transformation	10.7	1.5	-2.8	0.0	9.5	
Statistical differences	-0.6	-4.1	-24.5	-0.1	-29.3	
<i>Memo: international marine bunkers</i>	0.0	16.1	-	-	16.1	-22.7%
<i>Memo: international aviation bunkers</i>	-	30.8	-	-	30.8	62.7%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	395.4	87.0%	20.2	20.2
Road - oil	282.4	13.6%	14.4	34.7
Main activity prod. elec. and heat - gas	181.9	108.5%	9.3	44.0
Manufacturing industries - coal/peat	138.6	-15.2%	7.1	51.1
Manufacturing industries - oil	116.3	-20.9%	6.0	57.0
Main activity prod. elec. and heat - oil	77.8	-41.7%	4.0	61.0
Non-specified other - oil	69.5	-26.9%	3.6	64.6
Unallocated autoproducers - coal/peat	46.1	40.3%	2.4	66.9
Non-specified other - gas	43.5	291.7%	2.2	69.1
<i>Memo: total CO₂ from fuel combustion</i>	<i>1 613.1</i>	<i>20.0%</i>	<i>82.5</i>	<i>82.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Economies in Transition

Figure 1. CO₂ emissions by fuel

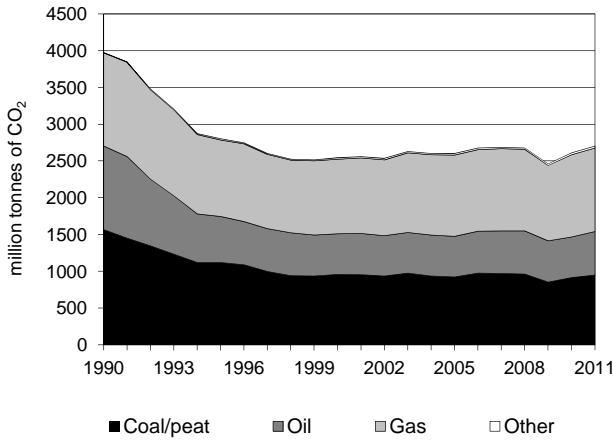


Figure 2. CO₂ emissions by sector

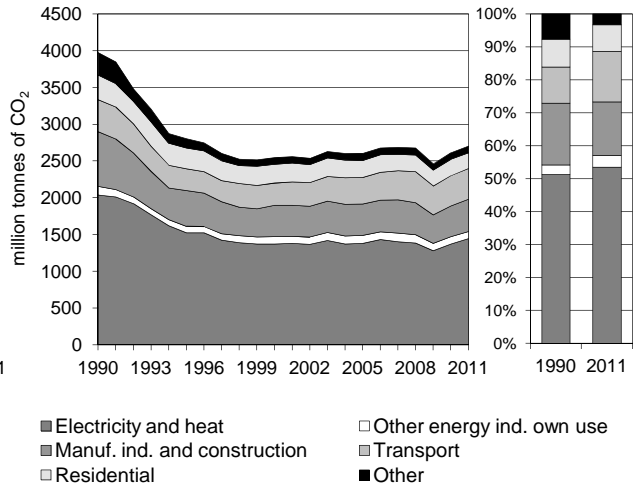


Figure 3. Reference vs Sectoral Approach

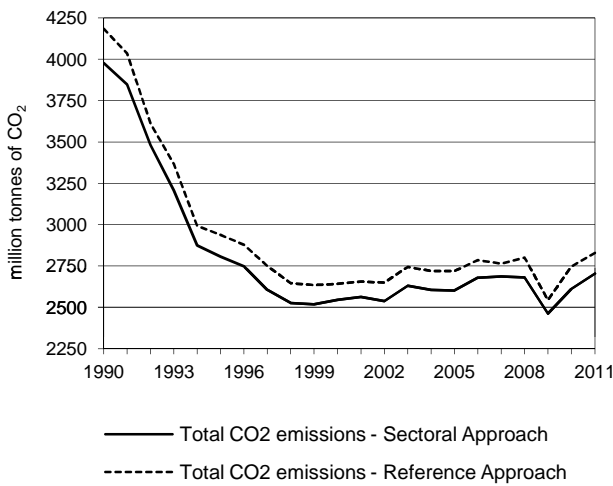


Figure 4. Electricity generation by fuel

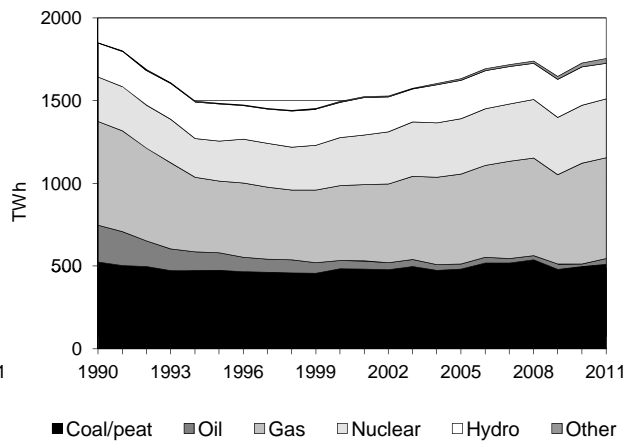


Figure 5. Changes in selected indicators *

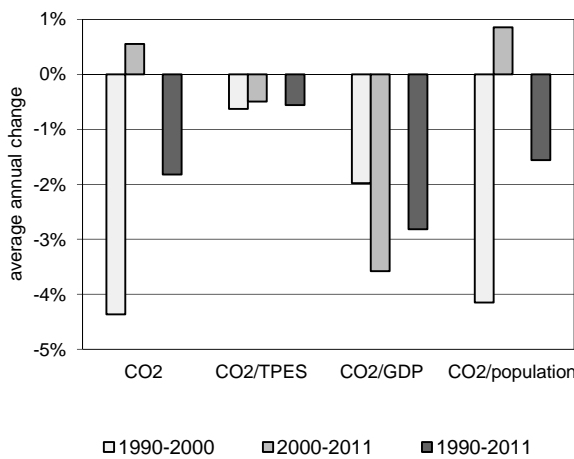
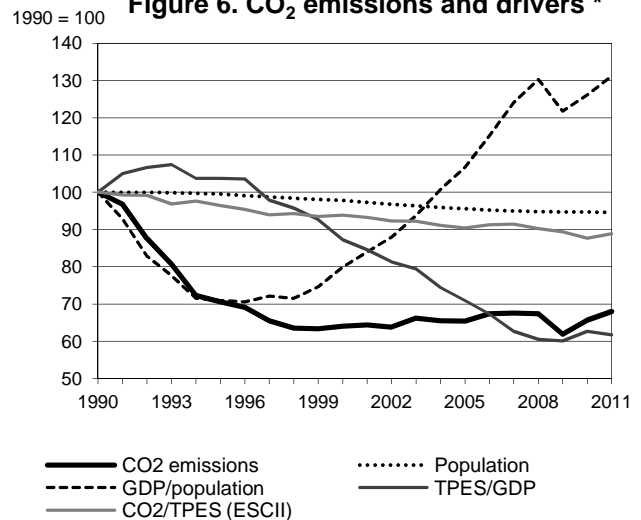


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Economies in Transition

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	3 976.6	2 805.5	2 545.3	2 602.0	2 462.5	2 611.6	2 703.7	-32.0%
TPES (PJ)	63 575	46 515	43 350	45 993	44 038	47 618	48 649	-23.5%
GDP (billion 2005 USD)	1 637.8	1 198.6	1 344.6	1 736.8	1 963.4	2 031.4	2 105.5	28.6%
GDP PPP (billion 2005 USD)	3 470.7	2 448.1	2 713.2	3 539.6	4 001.7	4 146.2	4 302.4	24.0%
Population (millions)	321.1	319.5	313.9	306.8	304.0	304.1	303.6	-5.4%
CO ₂ / TPES (tCO ₂ per TJ)	62.6	60.3	58.7	56.6	55.9	54.8	55.6	-11.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	2.43	2.34	1.89	1.50	1.25	1.29	1.28	-47.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.15	1.15	0.94	0.74	0.62	0.63	0.63	-45.2%
CO ₂ / population (tCO ₂ per capita)	12.39	8.78	8.11	8.48	8.10	8.59	8.90	-28.1%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	71	64	65	62	66	68	-32.0%
Population	100	99	98	96	95	95	95	-5.4%
GDP per population (GDP per capita)	100	71	80	107	122	126	131	31.1%
Energy intensity (TPES/GDP)	100	104	87	71	60	63	62	-38.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	96	94	90	89	88	89	-11.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	949.7	590.4	1 138.6	24.9	2 703.7	-32.0%
Main activity producer elec. and heat	587.9	29.0	436.8	0.8	1 054.6	-32.8%
Unallocated autoproducers	126.5	32.5	216.8	16.7	392.5	-16.4%
Other energy industry own use	16.3	51.8	27.7	0.7	96.5	-16.8%
Manufacturing industries and construction	162.5	79.5	189.9	6.0	438.0	-41.1%
Transport	0.1	332.1	84.0	-	416.2	-4.7%
<i>of which: road</i>	-	293.1	0.5	-	293.5	6.1%
Other	56.2	65.4	183.5	0.7	305.9	-52.3%
<i>of which: residential</i>	36.4	21.0	158.6	-	216.1	-35.5%
Reference Approach	1 018.7	626.9	1 159.9	24.9	2 830.4	-32.3%
Diff. due to losses and/or transformation	47.4	34.8	20.5	0.0	102.7	
Statistical differences	21.5	1.7	0.8	-0.0	24.0	
<i>Memo: international marine bunkers</i>	-	12.1	-	-	12.1	23.9%
<i>Memo: international aviation bunkers</i>	-	24.5	-	-	24.5	-33.1%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	587.9	-25.8%	14.8	14.8
Main activity prod. elec. and heat - gas	436.8	-13.0%	11.0	25.8
Road - oil	293.1	7.0%	7.4	33.2
Unallocated autoproducers - gas	216.8	-1.8%	5.5	38.7
Manufacturing industries - gas	189.9	-21.8%	4.8	43.5
Manufacturing industries - coal/peat	162.5	-45.5%	4.1	47.6
Residential - gas	158.6	2.9%	4.0	51.6
Unallocated autoproducers - coal/peat	126.5	-22.9%	3.2	54.8
Other transport - gas	83.5	8.1%	2.1	56.9
<i>Memo: total CO₂ from fuel combustion</i>	<i>2 703.7</i>	<i>-32.0%</i>	<i>68.2</i>	<i>68.2</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Non-Annex I Parties

Figure 1. CO₂ emissions by fuel

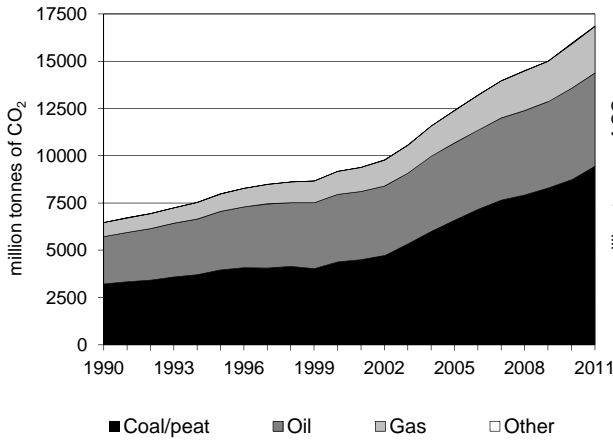


Figure 2. CO₂ emissions by sector

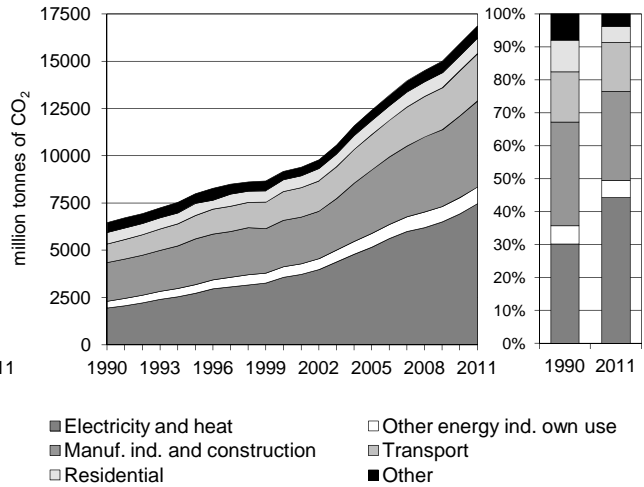


Figure 3. Reference vs Sectoral Approach

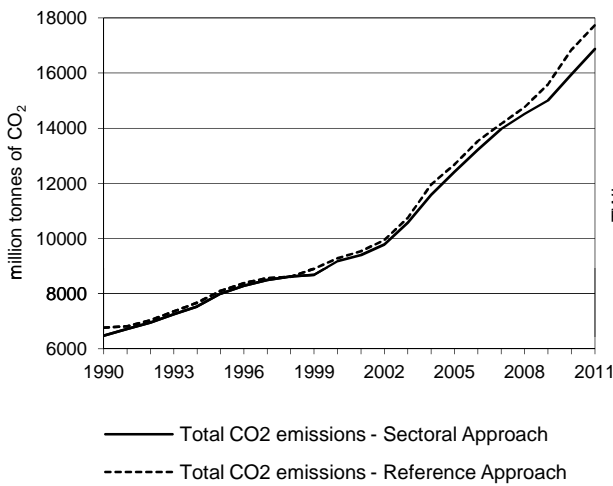


Figure 4. Electricity generation by fuel

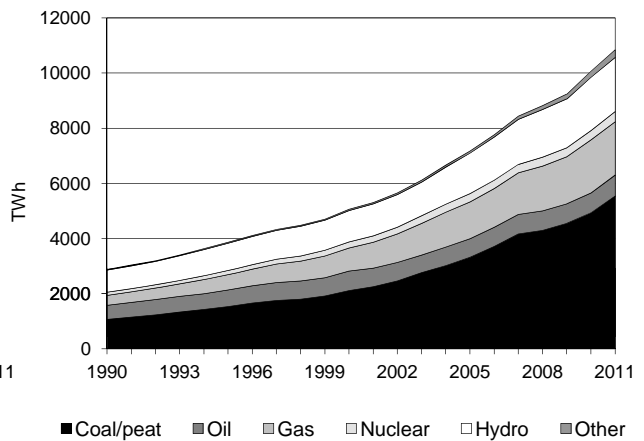


Figure 5. Changes in selected indicators *

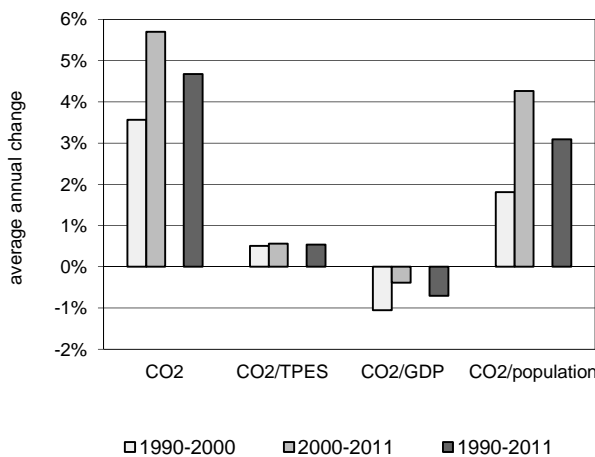
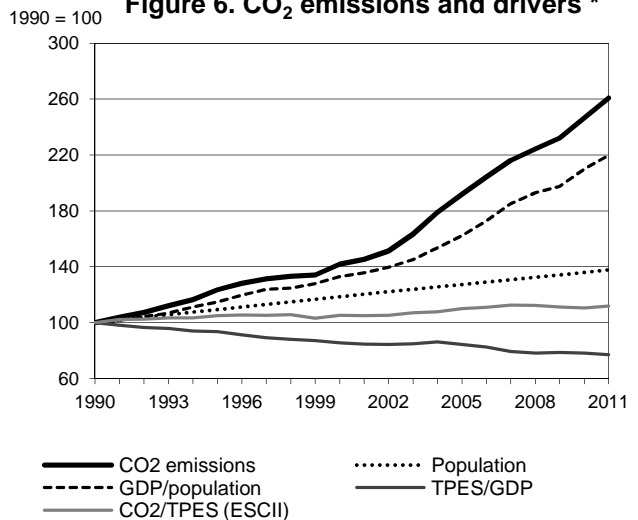


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Non-Annex I Parties

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	6 469.4	7 989.3	9 177.7	12 410.4	15 010.1	15 947.1	16 873.7	160.8%
TPES (PJ)	125 561	147 671	169 285	218 921	261 862	280 114	292 592	133.0%
GDP (billion 2005 USD)	5 283.9	6 624.0	8 280.9	10 667.6	13 426.9	14 426.4	15 256.1	188.7%
GDP PPP (billion 2005 USD)	10 808.5	13 572.2	17 050.2	22 331.4	28 660.9	30 864.1	32 708.7	202.6%
Population (millions)	4 113.1	4 499.3	4 876.6	5 233.8	5 519.7	5 592.3	5 665.3	37.7%
CO ₂ / TPES (tCO ₂ per TJ)	51.5	54.1	54.2	56.7	57.3	56.9	57.7	11.9%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.22	1.21	1.11	1.16	1.12	1.11	1.11	-9.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.60	0.59	0.54	0.56	0.52	0.52	0.52	-13.8%
CO ₂ / population (tCO ₂ per capita)	1.57	1.78	1.88	2.37	2.72	2.85	2.98	89.4%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	123	142	192	232	247	261	160.8%
Population	100	109	119	127	134	136	138	37.7%
GDP per population (GDP per capita)	100	115	133	162	198	210	220	119.7%
Energy intensity (TPES/GDP)	100	94	85	84	79	78	77	-23.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	105	105	110	111	110	112	11.9%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	9 457.9	4 927.2	2 452.5	36.1	16 873.7	160.8%
Main activity producer elec. and heat	5 569.4	553.1	876.3	1.0	6 999.9	281.0%
Unallocated autoproducers	264.5	88.9	97.8	26.1	477.4	301.5%
Other energy industry own use	226.1	274.4	378.8	-	879.3	147.0%
Manufacturing industries and construction	2 980.4	899.2	665.2	6.9	4 551.7	123.7%
Transport	12.6	2 406.8	81.5	-	2 500.9	153.1%
<i>of which: road</i>	-	2 189.9	69.8	-	2 259.7	163.6%
Other	405.0	704.8	352.8	2.0	1 464.6	29.1%
<i>of which: residential</i>	231.0	336.8	265.5	-	833.3	34.9%
Reference Approach	10 252.0	4 967.1	2 494.4	36.2	17 749.7	162.6%
Diff. due to losses and/or transformation	279.4	76.9	44.6	-	400.9	
Statistical differences	514.7	- 37.0	- 2.7	0.1	475.1	
<i>Memo: international marine bunkers</i>	-	379.9	-	-	379.9	194.7%
<i>Memo: international aviation bunkers</i>	-	209.7	-	-	209.7	138.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	5 569.4	358.1%	20.5	20.5
Manufacturing industries - coal/peat	2 980.4	132.3%	11.0	31.4
Road - oil	2 189.9	155.6%	8.1	39.5
Manufacturing industries - oil	899.2	67.5%	3.3	42.8
Main activity prod. elec. and heat - gas	876.3	295.9%	3.2	46.0
Manufacturing industries - gas	665.2	211.7%	2.4	48.5
Main activity prod. elec. and heat - oil	553.1	38.3%	2.0	50.5
Other energy industry own use - gas	378.8	191.6%	1.4	51.9
Non-specified other - oil	368.0	47.8%	1.4	53.3
<i>Memo: total CO₂ from fuel combustion</i>	<i>16 873.7</i>	<i>160.8%</i>	<i>62.1</i>	<i>62.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Annex I Kyoto Parties

Figure 1. CO₂ emissions by fuel

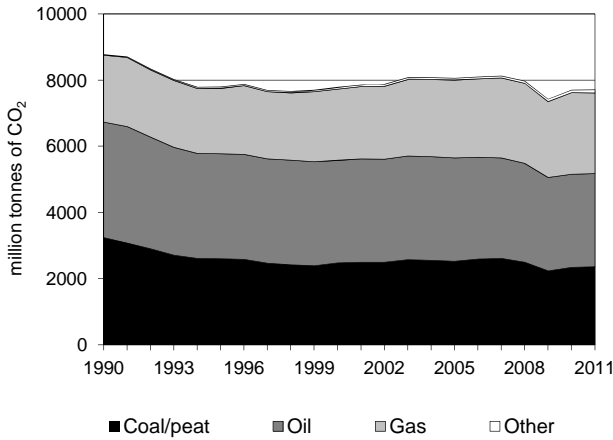


Figure 2. CO₂ emissions by sector

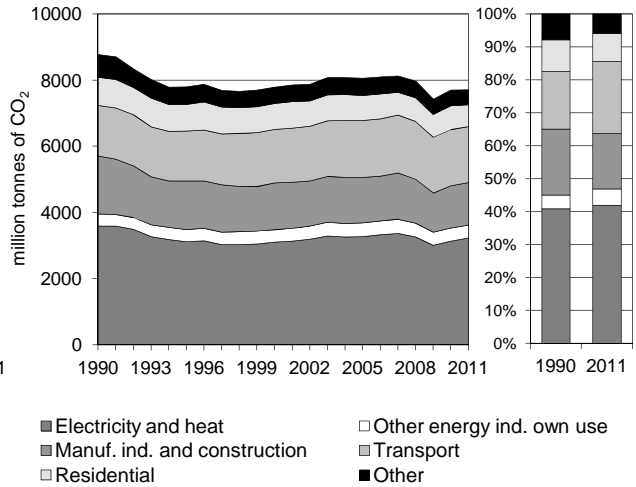


Figure 3. Reference vs Sectoral Approach

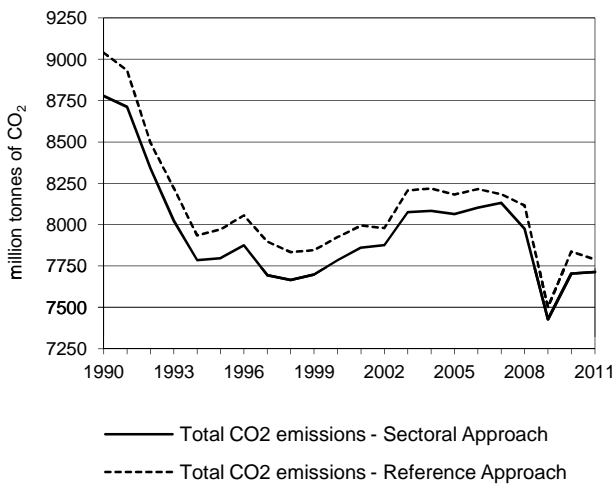


Figure 4. Electricity generation by fuel

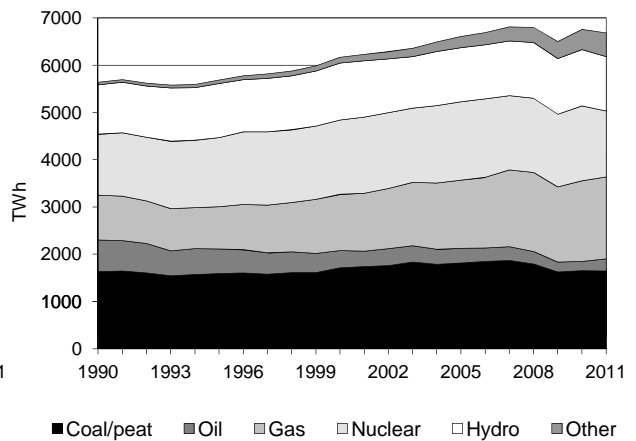


Figure 5. Changes in selected indicators *

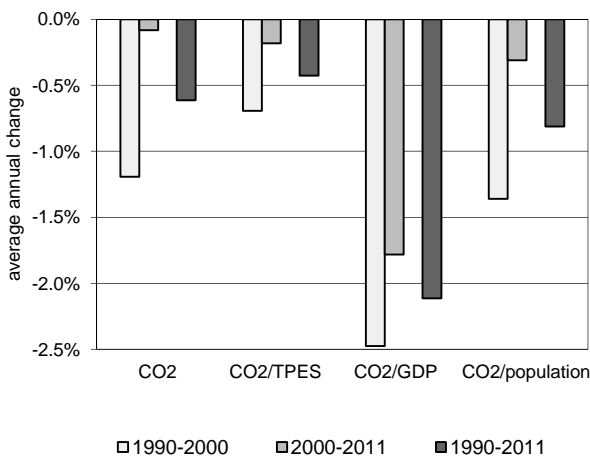
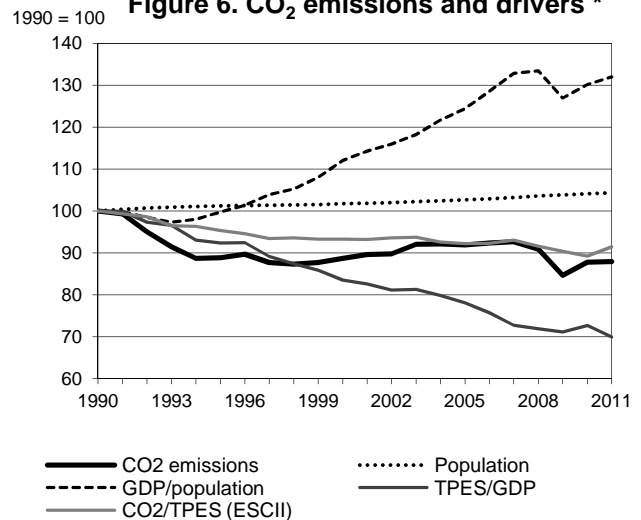


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Annex I Kyoto Parties

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	8 778.3	7 797.3	7 784.9	8 064.7	7 426.8	7 703.1	7 713.5	-12.1%
TPES (PJ)	149 398	139 277	142 047	148 910	139 934	146 973	143 617	-3.9%
GDP (billion 2005 USD)	16 706.5	17 570.9	19 855.7	21 923.1	22 399.1	23 019.0	23 337.1	39.7%
GDP PPP (billion 2005 USD)	16 895.7	17 058.3	19 250.9	21 574.2	22 258.2	22 880.9	23 249.5	37.6%
Population (millions)	860.0	870.4	874.6	882.8	892.7	895.1	896.8	4.3%
CO ₂ / TPES (tCO ₂ per TJ)	58.8	56.0	54.8	54.2	53.1	52.4	53.7	-8.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.53	0.44	0.39	0.37	0.33	0.33	0.33	-37.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.52	0.46	0.40	0.37	0.33	0.34	0.33	-36.1%
CO ₂ / population (tCO ₂ per capita)	10.21	8.96	8.90	9.14	8.32	8.61	8.60	-15.7%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	89	89	92	85	88	88	-12.1%
Population	100	101	102	103	104	104	104	4.3%
GDP per population (GDP per capita)	100	100	112	124	127	130	132	32.0%
Energy intensity (TPES/GDP)	100	92	83	78	71	73	70	-30.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	93	92	90	89	91	-8.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	2 357.6	2 818.2	2 442.9	94.7	7 713.5	-12.1%
Main activity producer elec. and heat	1 606.1	145.4	846.8	28.2	2 626.5	-10.5%
Unallocated autoproducers	213.9	70.2	288.6	35.0	607.7	-7.1%
Other energy industry own use	58.3	207.3	118.5	0.7	384.8	4.8%
Manufacturing industries and construction	406.4	385.5	470.2	28.4	1 290.5	-26.5%
Transport	0.6	1 595.8	94.8	-	1 691.2	10.5%
<i>of which: road</i>	-	1 453.7	3.3	-	1 457.0	15.4%
Other	72.3	413.9	624.0	2.5	1 112.8	-27.6%
<i>of which: residential</i>	46.9	180.9	429.8	0.0	657.6	-22.4%
Reference Approach	2 437.6	2 815.8	2 441.7	94.7	7 789.7	-13.8%
Diff. due to losses and/or transformation	68.5	24.7	30.4	0.1	123.5	
Statistical differences	11.5	- 27.1	- 31.5	- 0.1	- 47.3	
<i>Memo: international marine bunkers</i>	0.0	177.5	-	-	177.5	24.8%
<i>Memo: international aviation bunkers</i>	-	190.3	-	-	190.3	47.5%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	1 606.1	-9.8%	15.5	15.5
Road - oil	1 453.7	15.4%	14.1	29.6
Main activity prod. elec. and heat - gas	846.8	33.3%	8.2	37.8
Manufacturing industries - gas	470.2	-2.6%	4.5	42.3
Residential - gas	429.8	20.0%	4.2	46.5
Manufacturing industries - coal/peat	406.4	-42.7%	3.9	50.4
Manufacturing industries - oil	385.5	-30.8%	3.7	54.2
Unallocated autoproducers - gas	288.6	20.1%	2.8	57.0
Non-specified other - oil	233.1	-34.7%	2.3	59.2
<i>Memo: total CO₂ from fuel combustion</i>	<i>7 713.5</i>	<i>-12.1%</i>	<i>74.6</i>	<i>74.6</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

OECD Total *

Figure 1. CO₂ emissions by fuel

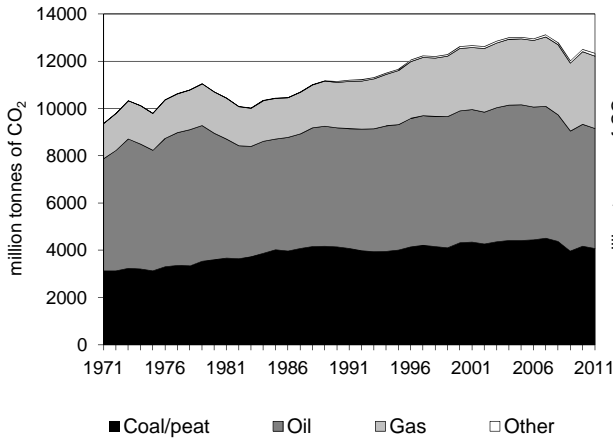


Figure 2. CO₂ emissions by sector

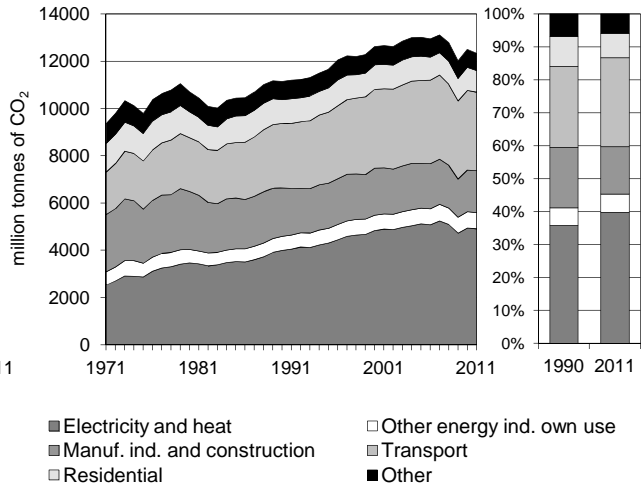


Figure 3. Reference vs Sectoral Approach

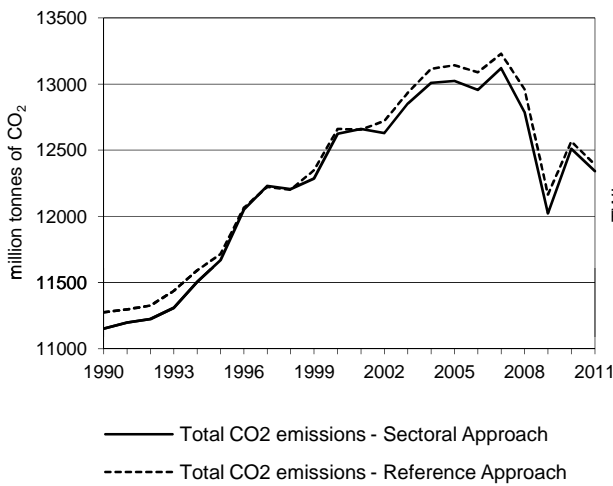


Figure 4. Electricity generation by fuel

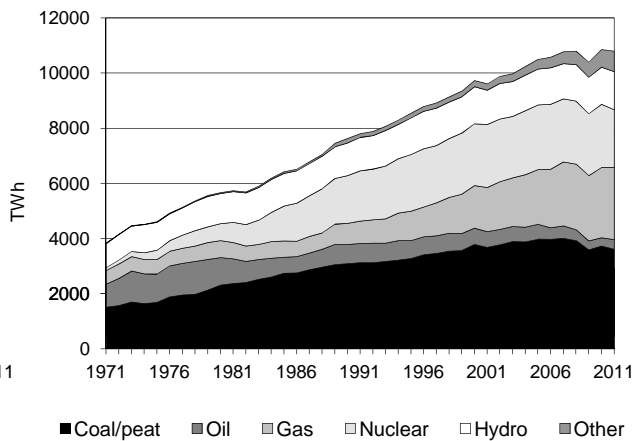


Figure 5. Changes in selected indicators **

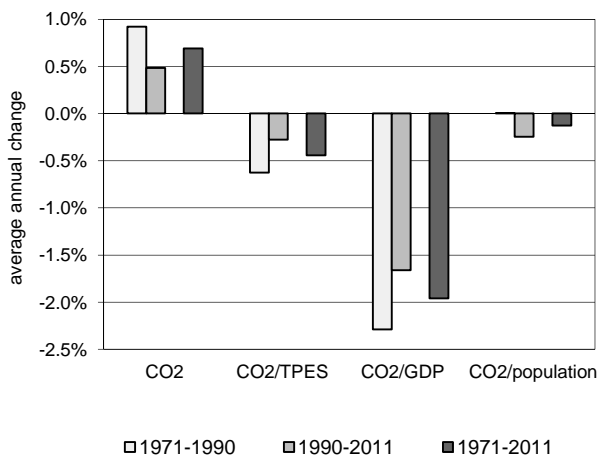
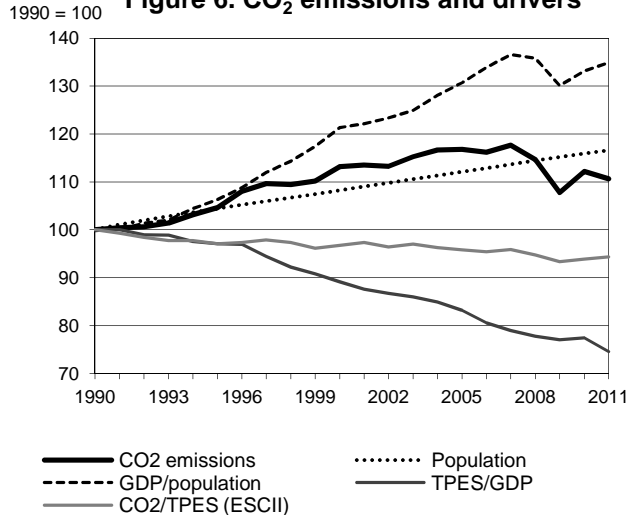


Figure 6. CO₂ emissions and drivers **



* Excludes Estonia and Slovenia prior to 1990.

** Based on GDP in 2005 USD, using purchasing power parities.

OECD Total

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	11 150.7	11 668.4	12 625.1	13 024.0	12 021.1	12 510.0	12 340.8	10.7%
TPES (PJ)	189 349	204 045	221 593	230 764	218 745	226 348	222 101	17.3%
GDP (billion 2005 USD)	24 792.8	27 454.8	32 279.4	35 853.3	36 544.4	37 594.9	38 239.5	54.2%
GDP PPP (billion 2005 USD)	24 095.6	26 752.0	31 642.0	35 293.4	36 124.8	37 202.6	37 905.7	57.3%
Population (millions)	1 064.0	1 111.4	1 151.8	1 192.7	1 226.0	1 233.6	1 240.5	16.6%
CO ₂ / TPES (tCO ₂ per TJ)	58.9	57.2	57.0	56.4	55.0	55.3	55.6	-5.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.45	0.43	0.39	0.36	0.33	0.33	0.32	-28.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.46	0.44	0.40	0.37	0.33	0.34	0.33	-29.6%
CO ₂ / population (tCO ₂ per capita)	10.48	10.50	10.96	10.92	9.81	10.14	9.95	-5.1%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	105	113	117	108	112	111	10.7%
Population	100	104	108	112	115	116	117	16.6%
GDP per population (GDP per capita)	100	106	121	131	130	133	135	34.9%
Energy intensity (TPES/GDP)	100	97	89	83	77	77	75	-25.4%
Carbon intensity: ESCII (CO ₂ /TPES)	100	97	97	96	93	94	94	-5.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	4 074.2	5 077.8	3 070.2	118.6	12 340.8	10.7%
Main activity producer elec. and heat	3 290.8	190.9	1 009.4	43.7	4 534.9	26.1%
Unallocated autoproducers	164.3	58.5	125.5	29.0	377.3	-5.1%
Other energy industry own use	86.0	347.5	251.8	0.0	685.2	15.4%
Manufacturing industries and construction	448.5	606.8	671.3	41.3	1 767.8	-13.6%
Transport	0.5	3 274.6	55.1	-	3 330.2	21.6%
<i>of which: road</i>	-	2 957.3	7.3	-	2 964.7	27.5%
Other	84.1	599.5	957.1	4.6	1 645.5	-7.4%
<i>of which: residential</i>	63.1	255.8	592.3	0.0	911.2	-9.4%
Reference Approach	4 170.8	5 043.8	3 055.6	118.6	12 388.8	9.9%
Diff. due to losses and/or transformation	61.3	- 37.2	6.3	0.1	30.5	
Statistical differences	35.3	3.2	- 20.9	- 0.1	17.6	
<i>Memo: international marine bunkers</i>	0.0	283.9	-	-	283.9	22.6%
<i>Memo: international aviation bunkers</i>	-	261.3	-	-	261.3	84.1%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	3 290.8	16.2%	21.1	21.1
Road - oil	2 957.3	27.2%	19.0	40.1
Main activity prod. elec. and heat - gas	1 009.4	206.6%	6.5	46.5
Manufacturing industries - gas	671.3	15.0%	4.3	50.8
Manufacturing industries - oil	606.8	-15.4%	3.9	54.7
Residential - gas	592.3	27.6%	3.8	58.5
Manufacturing industries - coal/peat	448.5	-39.2%	2.9	61.4
Non-specified other - gas	364.8	41.8%	2.3	63.7
Other energy industry own use - oil	347.5	-4.1%	2.2	66.0
<i>Memo: total CO₂ from fuel combustion</i>	<i>12 340.8</i>	<i>10.7%</i>	<i>79.1</i>	<i>79.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

OECD Americas

Figure 1. CO₂ emissions by fuel

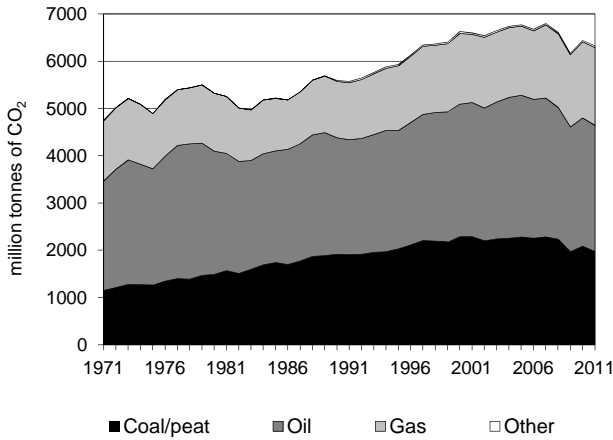


Figure 2. CO₂ emissions by sector

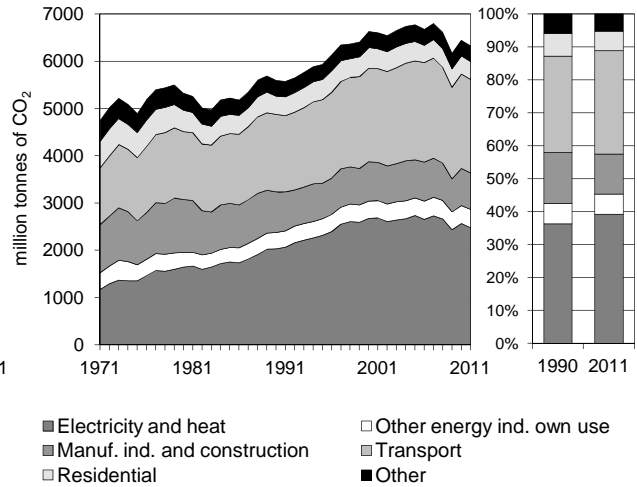


Figure 3. Reference vs Sectoral Approach

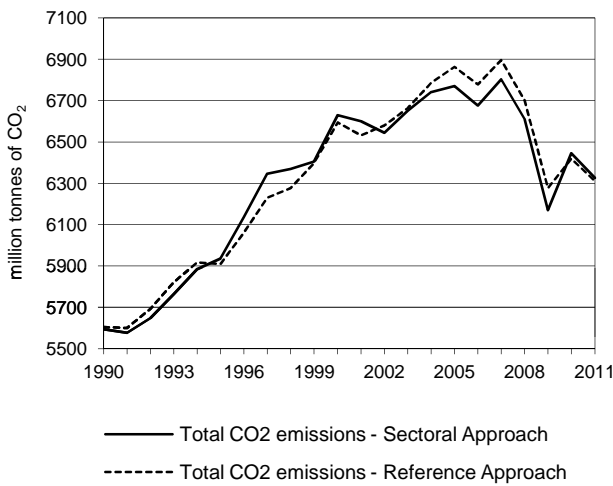


Figure 4. Electricity generation by fuel

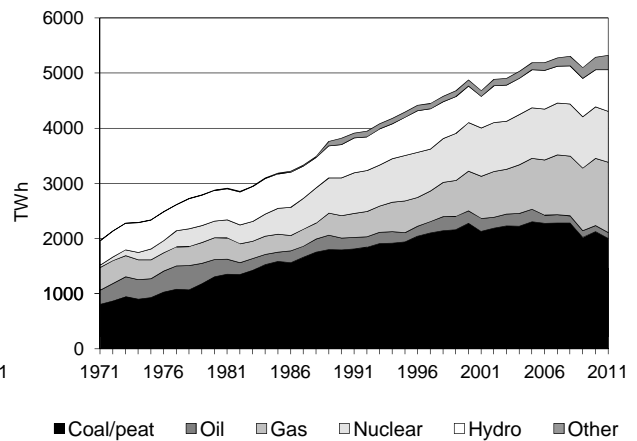


Figure 5. Changes in selected indicators *

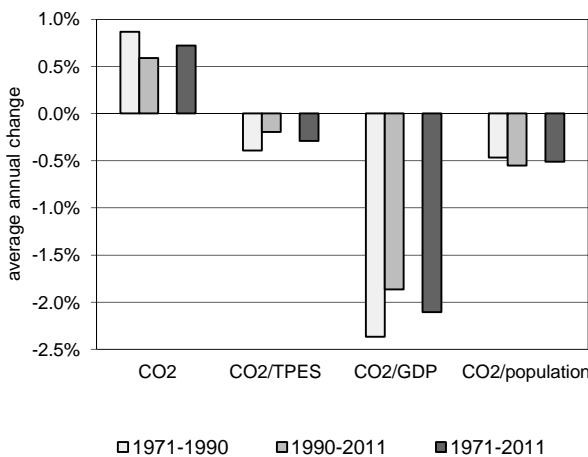
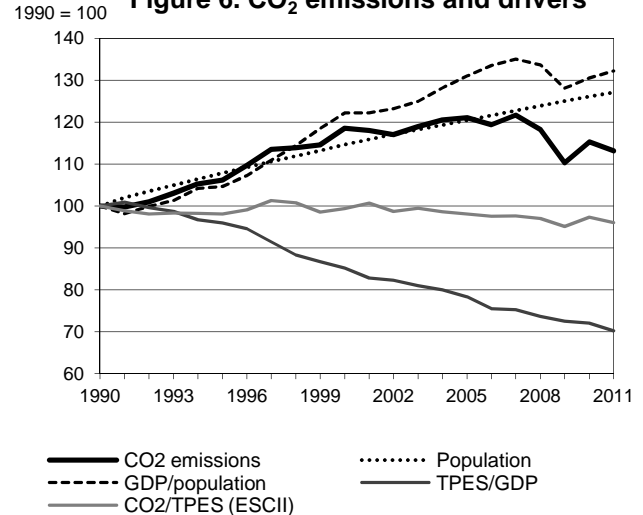


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

OECD Americas

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	5 593.2	5 935.5	6 629.8	6 770.8	6 169.7	6 445.0	6 325.6	13.1%
TPES (PJ)	94 624	102 420	112 848	116 798	109 737	112 053	111 485	17.8%
GDP (billion 2005 USD)	9 313.4	10 508.1	13 027.4	14 667.2	14 870.4	15 265.0	15 574.7	67.2%
GDP PPP (billion 2005 USD)	9 638.0	10 874.0	13 500.5	15 196.5	15 425.9	15 850.8	16 185.6	67.9%
Population (millions)	372.3	401.5	426.8	448.3	465.3	469.3	473.0	27.1%
CO ₂ / TPES (tCO ₂ per TJ)	59.1	58.0	58.7	58.0	56.2	57.5	56.7	-4.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.60	0.56	0.51	0.46	0.41	0.42	0.41	-32.4%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.58	0.55	0.49	0.45	0.40	0.41	0.39	-32.7%
CO ₂ / population (tCO ₂ per capita)	15.02	14.79	15.53	15.10	13.26	13.73	13.37	-11.0%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	106	119	121	110	115	113	13.1%
Population	100	108	115	120	125	126	127	27.1%
GDP per population (GDP per capita)	100	105	122	131	128	130	132	32.2%
Energy intensity (TPES/GDP)	100	96	85	78	72	72	70	-29.8%
Carbon intensity: ESCII (CO ₂ /TPES)	100	98	99	98	95	97	96	-4.0%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	1 976.2	2 669.9	1 647.9	31.7	6 325.6	13.1%
Main activity producer elec. and heat	1 816.5	66.5	494.2	15.5	2 392.7	23.6%
Unallocated autoproducers	20.9	12.0	49.1	7.3	89.2	-9.1%
Other energy industry own use	11.0	187.6	185.8	-	384.4	10.9%
Manufacturing industries and construction	122.5	256.2	385.8	8.2	772.6	-10.2%
Transport	-	1 933.3	44.5	-	1 977.8	20.9%
<i>of which: road</i>	-	1 710.2	1.9	-	1 712.1	29.6%
Other	5.3	214.4	488.6	0.8	708.9	-1.1%
<i>of which: residential</i>	0.2	84.9	292.1	-	377.1	-2.4%
Reference Approach	2 013.2	2 610.5	1 654.5	31.7	6 309.9	12.6%
Diff. due to losses and/or transformation	19.4	- 60.5	2.1	-	- 39.0	
Statistical differences	17.7	1.2	4.5	-	23.3	
<i>Memo: international marine bunkers</i>	-	89.6	-	-	89.6	-4.8%
<i>Memo: international aviation bunkers</i>	-	77.8	-	-	77.8	64.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	1 816.5	11.9%	22.7	22.7
Road - oil	1 710.2	29.5%	21.4	44.1
Main activity prod. elec. and heat - gas	494.2	201.9%	6.2	50.3
Manufacturing industries - gas	385.8	9.1%	4.8	55.1
Residential - gas	292.1	8.8%	3.7	58.8
Manufacturing industries - oil	256.2	-6.6%	3.2	62.0
Other transport - oil	223.1	-18.1%	2.8	64.8
Non-specified other - gas	196.4	19.9%	2.5	67.2
Other energy industry own use - oil	187.6	-8.3%	2.3	69.6
<i>Memo: total CO₂ from fuel combustion</i>	<i>6 325.6</i>	<i>13.1%</i>	<i>79.1</i>	<i>79.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

OECD Asia Oceania

Figure 1. CO₂ emissions by fuel

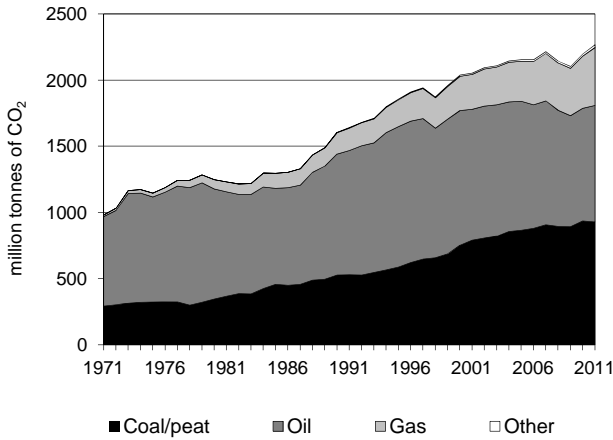


Figure 2. CO₂ emissions by sector

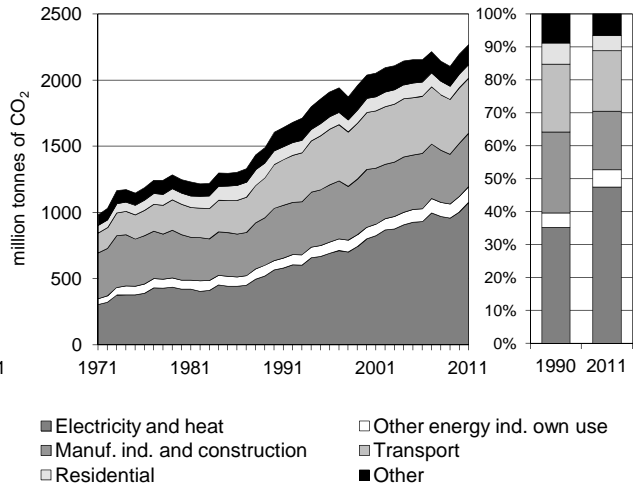


Figure 3. Reference vs Sectoral Approach

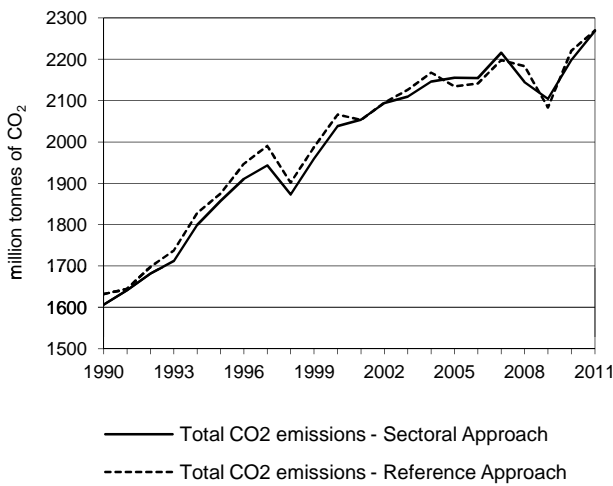


Figure 4. Electricity generation by fuel

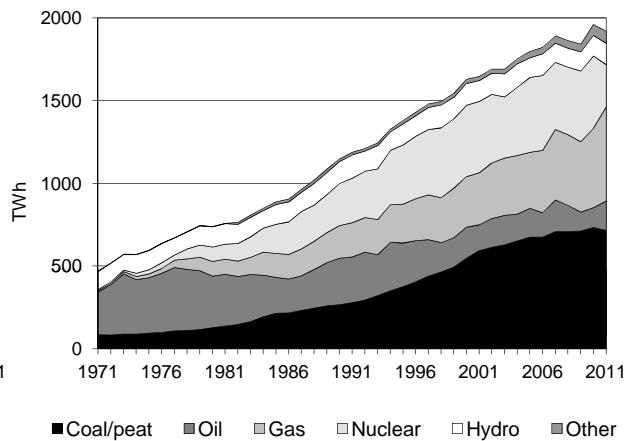


Figure 5. Changes in selected indicators *

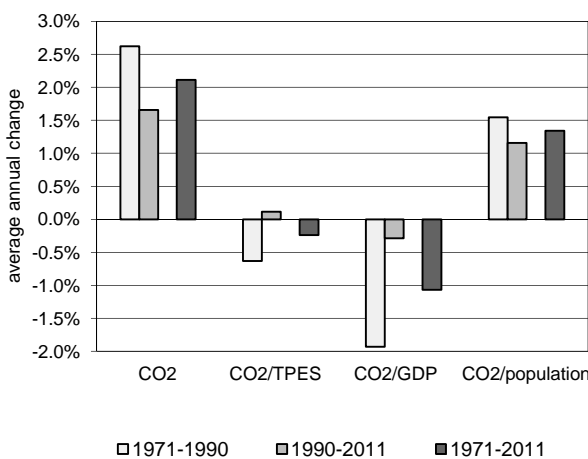
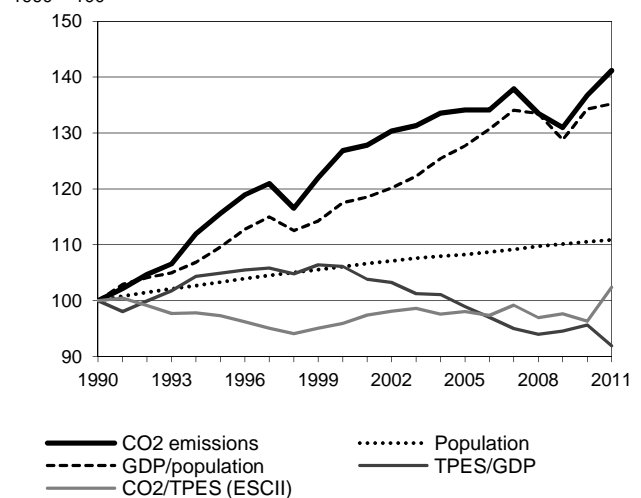


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

OECD Asia Oceania

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	1 606.7	1 857.5	2 038.4	2 154.9	2 104.0	2 197.5	2 268.1	41.2%
TPES (PJ)	26 920	31 986	35 610	36 825	36 107	38 228	37 104	37.8%
GDP (billion 2005 USD)	4 800.5	5 365.1	5 840.3	6 423.3	6 525.2	6 821.2	6 869.9	43.1%
GDP PPP (billion 2005 USD)	4 316.5	4 888.8	5 381.1	5 969.0	6 123.7	6 407.4	6 470.9	49.9%
Population (millions)	191.7	198.1	203.4	207.5	211.2	211.9	212.6	10.9%
CO ₂ / TPES (tCO ₂ per TJ)	59.7	58.1	57.2	58.5	58.3	57.5	61.1	2.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.33	0.35	0.35	0.34	0.32	0.32	0.33	-1.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.37	0.38	0.38	0.36	0.34	0.34	0.35	-5.8%
CO ₂ / population (tCO ₂ per capita)	8.38	9.38	10.02	10.38	9.96	10.37	10.67	27.3%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	116	127	134	131	137	141	41.2%
Population	100	103	106	108	110	111	111	10.9%
GDP per population (GDP per capita)	100	110	118	128	129	134	135	35.2%
Energy intensity (TPES/GDP)	100	105	106	99	95	96	92	-8.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	97	96	98	98	96	102	2.4%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	929.8	880.2	438.0	20.1	2 268.1	41.2%
Main activity producer elec. and heat	622.4	88.4	235.4	1.9	948.2	96.0%
Unallocated autoproducers	85.3	24.3	13.2	5.6	128.4	56.0%
Other energy industry own use	43.6	51.8	22.9	-	118.3	67.6%
Manufacturing industries and construction	172.2	160.0	61.6	10.6	404.4	2.3%
Transport	0.5	411.8	3.6	-	415.8	26.3%
<i>of which: road</i>	-	372.5	2.6	-	375.1	30.9%
Other	5.8	143.9	101.2	2.0	253.0	3.1%
<i>of which: residential</i>	3.3	49.9	49.9	-	103.2	-0.9%
Reference Approach	955.7	883.8	410.2	20.1	2 269.8	39.1%
Diff. due to losses and/or transformation	22.2	9.7	- 3.9	0.0	28.0	
Statistical differences	3.7	- 6.1	- 23.8	- 0.1	- 26.3	
<i>Memo: international marine bunkers</i>	0.0	45.1	-	-	45.1	70.1%
<i>Memo: international aviation bunkers</i>	-	45.4	-	-	45.4	112.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	622.4	163.8%	23.0	23.0
Road - oil	372.5	30.0%	13.8	36.7
Main activity prod. elec. and heat - gas	235.4	155.9%	8.7	45.4
Manufacturing industries - coal/peat	172.2	-3.1%	6.4	51.8
Manufacturing industries - oil	160.0	-15.5%	5.9	57.7
Non-specified other - oil	94.0	-25.0%	3.5	61.2
Main activity prod. elec. and heat - oil	88.4	-43.1%	3.3	64.4
Unallocated autoproducers - coal/peat	85.3	60.5%	3.2	67.6
Manufacturing industries - gas	61.6	133.5%	2.3	69.9
<i>Memo: total CO₂ from fuel combustion</i>	<i>2 268.1</i>	<i>41.2%</i>	<i>83.8</i>	<i>83.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

OECD Europe *

Figure 1. CO₂ emissions by fuel

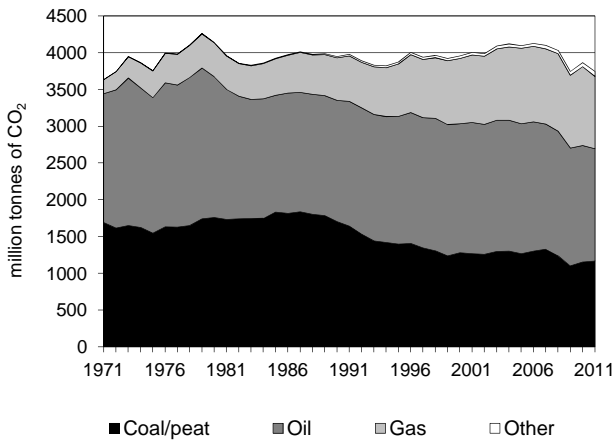


Figure 2. CO₂ emissions by sector

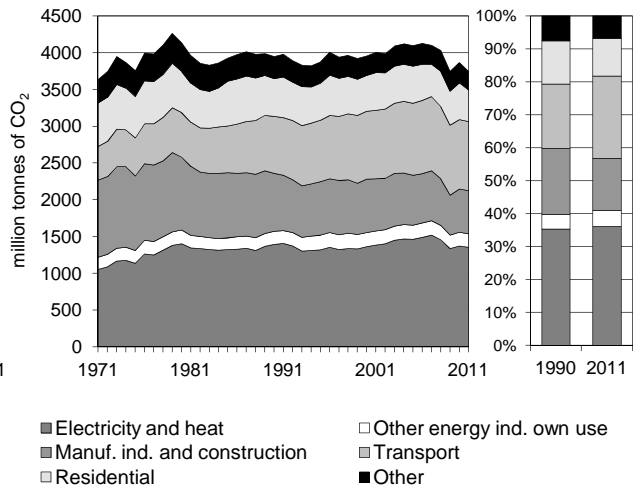


Figure 3. Reference vs Sectoral Approach

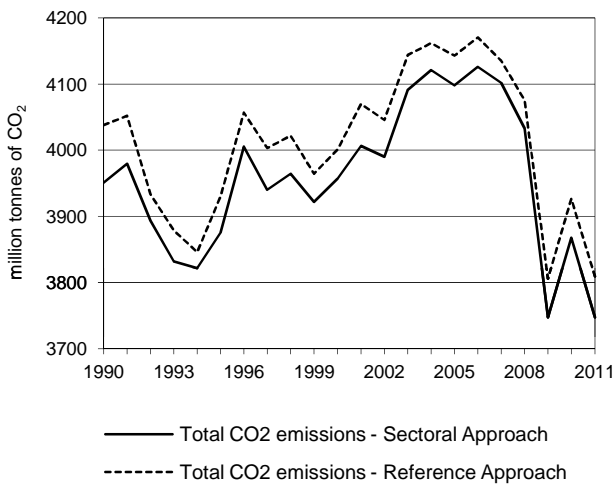


Figure 4. Electricity generation by fuel

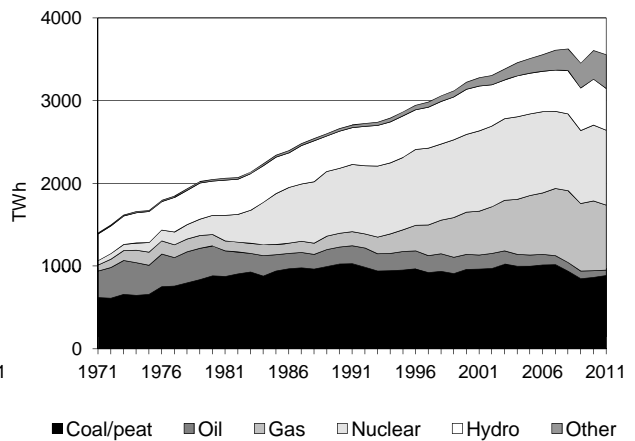


Figure 5. Changes in selected indicators **

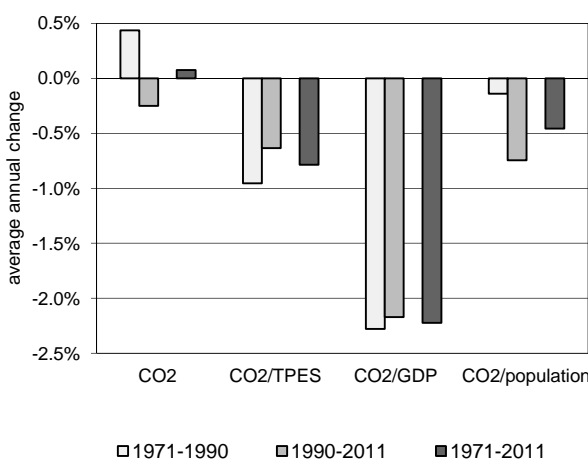
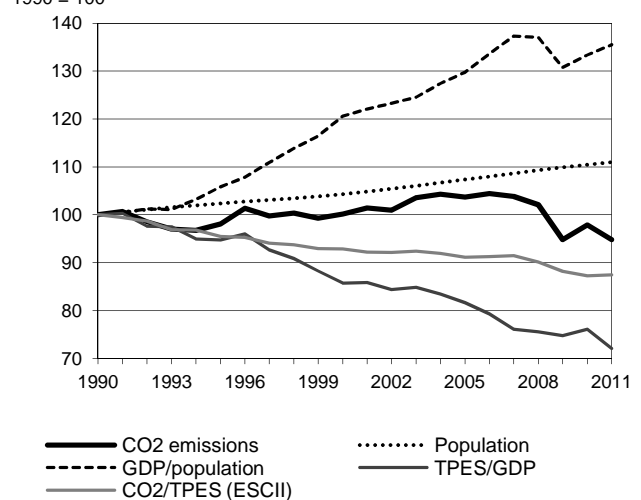


Figure 6. CO₂ emissions and drivers **



* Excludes Estonia and Slovenia prior to 1990.

** Based on GDP in 2005 USD, using purchasing power parities.

OECD Europe

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	3 950.8	3 875.4	3 956.9	4 098.2	3 747.4	3 867.5	3 747.1	-5.2%
TPES (PJ)	67 805	69 640	73 134	77 141	72 902	76 068	73 511	8.4%
GDP (billion 2005 USD)	10 678.9	11 581.6	13 411.6	14 762.8	15 148.8	15 508.7	15 794.9	47.9%
GDP PPP (billion 2005 USD)	10 141.1	10 989.2	12 760.4	14 127.8	14 575.2	14 944.5	15 249.2	50.4%
Population (millions)	500.0	511.9	521.7	536.9	549.5	552.4	555.0	11.0%
CO ₂ / TPES (tCO ₂ per TJ)	58.3	55.6	54.1	53.1	51.4	50.8	51.0	-12.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.37	0.33	0.30	0.28	0.25	0.25	0.24	-35.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.39	0.35	0.31	0.29	0.26	0.26	0.25	-36.9%
CO ₂ / population (tCO ₂ per capita)	7.90	7.57	7.58	7.63	6.82	7.00	6.75	-14.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	98	100	104	95	98	95	-5.2%
Population	100	102	104	107	110	110	111	11.0%
GDP per population (GDP per capita)	100	106	121	130	131	133	135	35.5%
Energy intensity (TPES/GDP)	100	95	86	82	75	76	72	-27.9%
Carbon intensity: ESCII (CO ₂ /TPES)	100	96	93	91	88	87	87	-12.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	1 168.2	1 527.7	984.3	66.8	3 747.1	-5.2%
Main activity producer elec. and heat	851.8	36.1	279.8	26.3	1 194.0	1.3%
Unallocated autoproducers	58.1	22.2	63.3	16.1	159.7	-26.4%
Other energy industry own use	31.4	108.0	43.1	0.0	182.5	3.5%
Manufacturing industries and construction	153.8	190.6	223.9	22.5	590.8	-25.2%
Transport	0.0	929.6	6.9	-	936.5	21.0%
<i>of which: road</i>	-	874.6	2.8	-	877.4	22.3%
Other	73.1	241.3	367.3	1.9	683.6	-16.2%
<i>of which: residential</i>	59.6	121.0	250.2	0.0	430.8	-16.4%
Reference Approach	1 202.0	1 549.5	990.9	66.8	3 809.1	-5.7%
Diff. due to losses and/or transformation	19.8	13.6	8.2	0.0	41.5	
Statistical differences	14.0	8.2	-1.6	-0.0	20.5	
<i>Memo: international marine bunkers</i>	-	149.3	-	-	149.3	34.6%
<i>Memo: international aviation bunkers</i>	-	138.2	-	-	138.2	88.5%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	874.6	22.0%	17.9	17.9
Main activity prod. elec. and heat - coal/peat	851.8	-12.4%	17.4	35.3
Main activity prod. elec. and heat - gas	279.8	280.3%	5.7	41.0
Residential - gas	250.2	44.6%	5.1	46.1
Manufacturing industries - gas	223.9	9.9%	4.6	50.7
Manufacturing industries - oil	190.6	-24.7%	3.9	54.6
Manufacturing industries - coal/peat	153.8	-53.1%	3.1	57.7
Residential - oil	121.0	-39.0%	2.5	60.2
Non-specified other - oil	120.3	-22.8%	2.5	62.7
<i>Memo: total CO₂ from fuel combustion</i>	<i>3 747.1</i>	<i>-5.2%</i>	<i>76.6</i>	<i>76.6</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

European Union - 27

Figure 1. CO₂ emissions by fuel

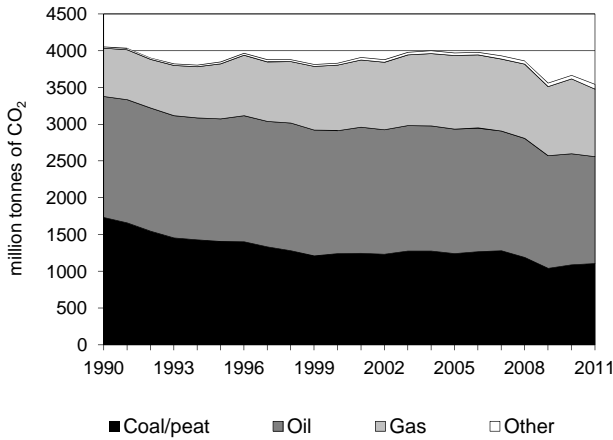


Figure 2. CO₂ emissions by sector

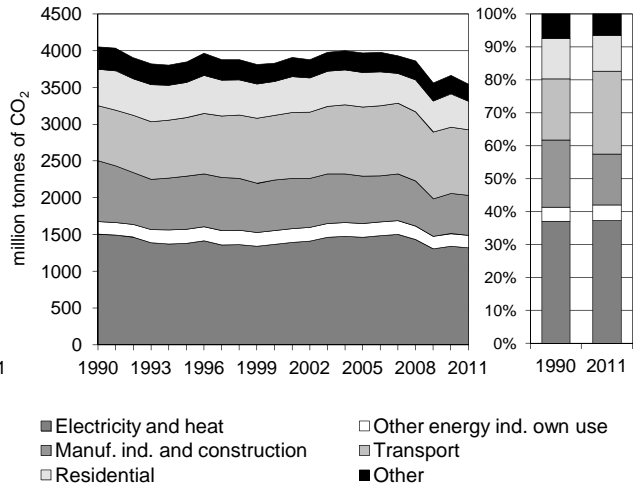


Figure 3. Reference vs Sectoral Approach

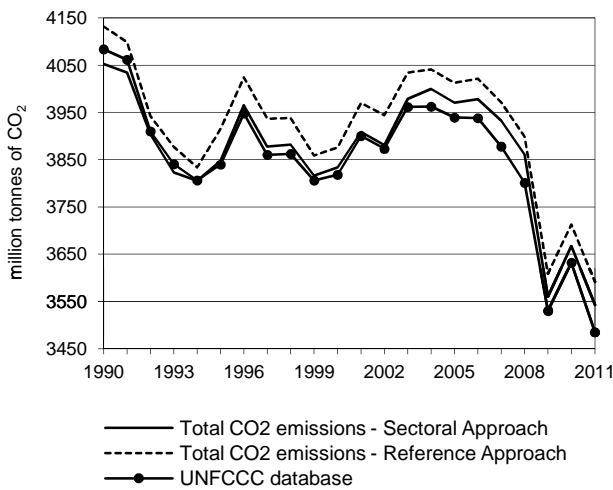


Figure 4. Electricity generation by fuel

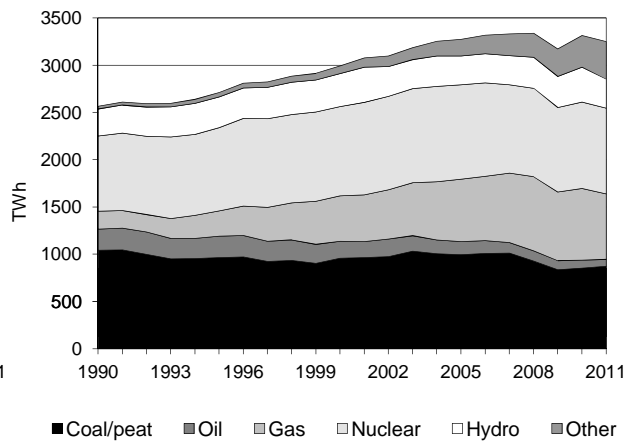


Figure 5. Changes in selected indicators *

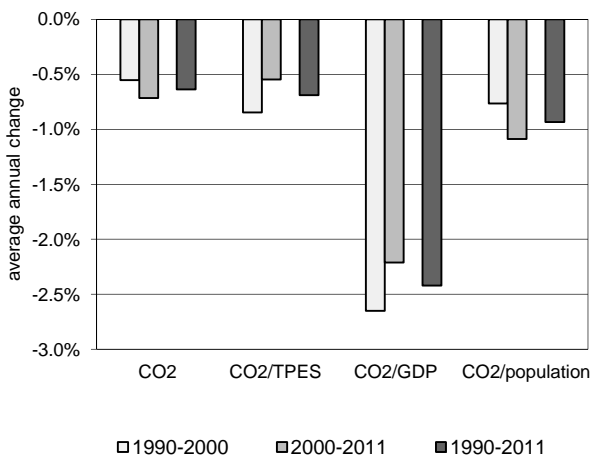
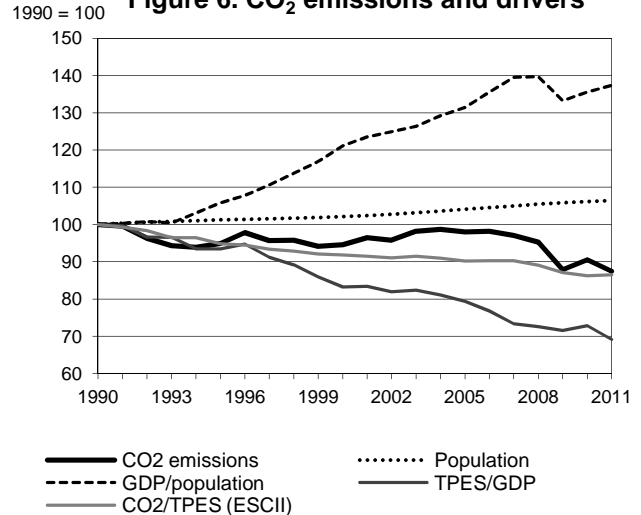


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

European Union - 27

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	4 052.5	3 847.3	3 833.8	3 970.8	3 560.3	3 667.4	3 542.7	-12.6%
TPES (PJ)	68 485	68 551	70 545	74 398	69 095	71 834	69 250	1.1%
GDP (billion 2005 USD)	10 052.0	10 843.0	12 524.5	13 767.5	14 098.5	14 399.6	14 626.4	45.5%
GDP PPP (billion 2005 USD)	9 666.2	10 356.8	11 960.6	13 225.1	13 630.2	13 916.7	14 137.8	46.3%
Population (millions)	472.8	478.6	483.0	492.1	500.4	502.1	503.4	6.5%
CO ₂ / TPES (tCO ₂ per TJ)	59.2	56.1	54.3	53.4	51.5	51.1	51.2	-13.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.40	0.35	0.31	0.29	0.25	0.25	0.24	-39.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.42	0.37	0.32	0.30	0.26	0.26	0.25	-40.2%
CO ₂ / population (tCO ₂ per capita)	8.57	8.04	7.94	8.07	7.12	7.30	7.04	-17.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	95	95	98	88	90	87	-12.6%
Population	100	101	102	104	106	106	106	6.5%
GDP per population (GDP per capita)	100	106	121	131	133	136	137	37.4%
Energy intensity (TPES/GDP)	100	93	83	79	72	73	69	-30.9%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	92	90	87	86	86	-13.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	1 107.9	1 453.0	919.5	62.3	3 542.7	-12.6%
Main activity producer elec. and heat	848.5	43.0	255.4	25.2	1 172.1	-8.1%
Unallocated autoproducers	54.1	21.9	58.2	13.7	147.9	-35.7%
Other energy industry own use	27.5	107.2	33.3	0.0	168.0	-2.4%
Manufacturing industries and construction	127.6	182.7	215.2	21.9	547.3	-33.8%
Transport	0.0	884.6	6.9	-	891.5	19.0%
<i>of which: road</i>	-	837.5	2.8	-	840.3	20.8%
Other	50.2	213.6	350.5	1.6	615.9	-23.0%
<i>of which: residential</i>	37.7	111.5	237.2	0.0	386.5	-22.1%
Reference Approach	1 130.6	1 470.7	927.5	62.3	3 591.1	-13.1%
Diff. due to losses and/or transformation	18.5	15.8	9.2	0.0	43.5	
Statistical differences	4.2	2.0	-1.2	-0.0	4.9	
<i>Memo: international marine bunkers</i>	-	153.3	-	-	153.3	37.8%
<i>Memo: international aviation bunkers</i>	-	131.0	-	-	131.0	83.9%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	848.5	-15.6%	18.4	18.4
Road - oil	837.5	20.5%	18.2	36.6
Main activity prod. elec. and heat - gas	255.4	145.9%	5.5	42.1
Residential - gas	237.2	33.6%	5.1	47.3
Manufacturing industries - gas	215.2	-13.8%	4.7	51.9
Manufacturing industries - oil	182.7	-27.2%	4.0	55.9
Manufacturing industries - coal/peat	127.6	-60.4%	2.8	58.7
Non-specified other - gas	113.3	33.9%	2.5	61.1
Residential - oil	111.5	-38.0%	2.4	63.5
<i>Memo: total CO₂ from fuel combustion</i>	<i>3 542.7</i>	<i>-12.6%</i>	<i>76.8</i>	<i>76.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Non-OECD Europe and Eurasia *

Figure 1. CO₂ emissions by fuel

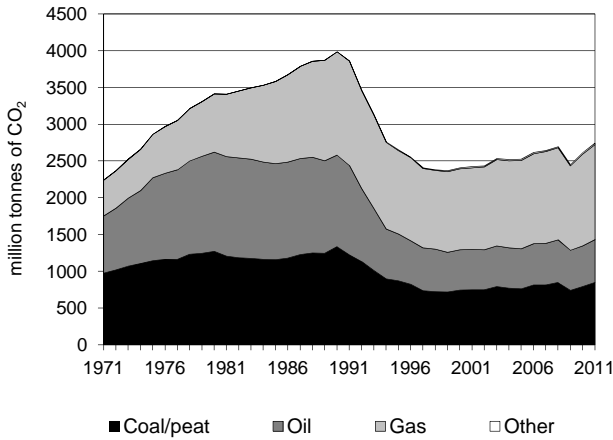


Figure 2. CO₂ emissions by sector

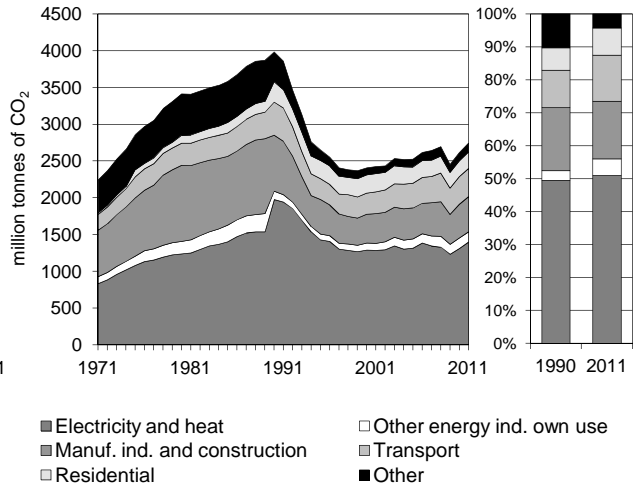


Figure 3. Reference vs Sectoral Approach

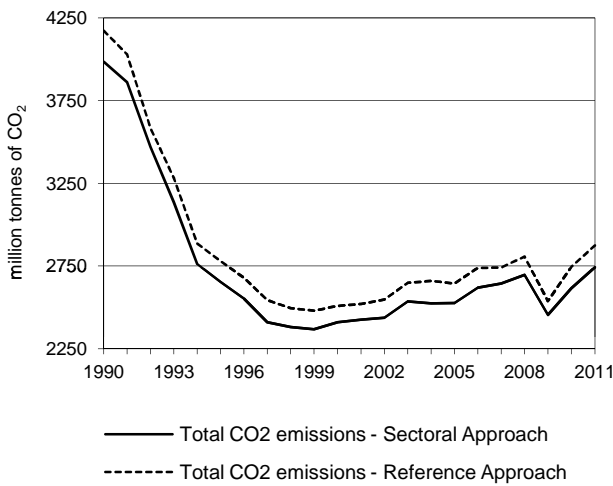


Figure 4. Electricity generation by fuel

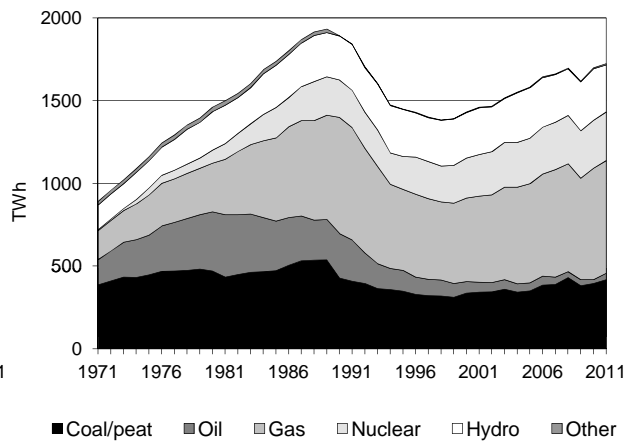


Figure 5. Changes in selected indicators **

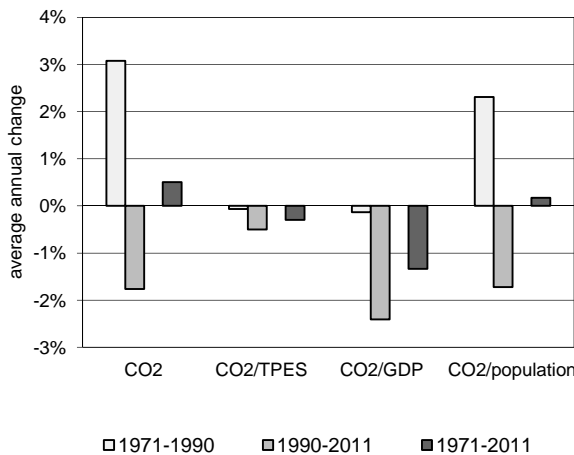
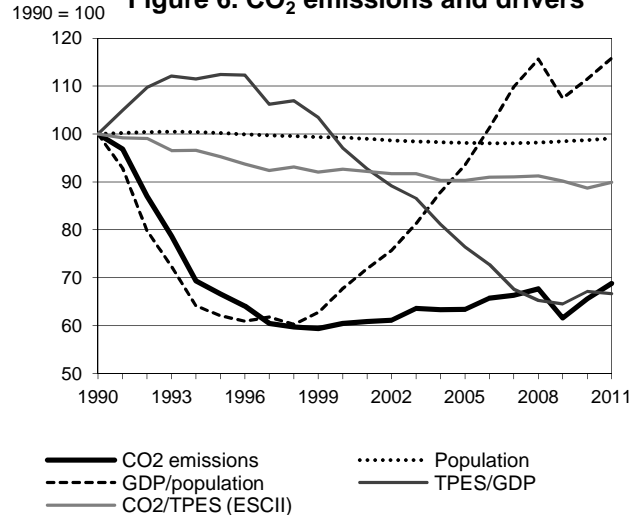


Figure 6. CO₂ emissions and drivers **



* Includes Estonia and Slovenia prior to 1990.

** Based on GDP in 2005 USD, using purchasing power parities.

Non-OECD Europe and Eurasia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	3 985.9	2 653.8	2 410.1	2 526.1	2 453.7	2 614.2	2 742.8	-31.2%
TPES (PJ)	64 347	44 961	42 004	45 163	43 929	47 570	49 234	-23.5%
GDP (billion 2005 USD)	1 379.5	872.1	947.2	1 287.4	1 477.7	1 535.0	1 597.1	15.8%
GDP PPP (billion 2005 USD)	3 194.8	1 985.9	2 148.3	2 933.0	3 381.1	3 518.0	3 666.1	14.8%
Population (millions)	342.9	343.5	340.4	336.6	337.5	338.6	339.6	-1.0%
CO ₂ / TPES (tCO ₂ per TJ)	61.9	59.0	57.4	55.9	55.9	55.0	55.7	-10.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	2.89	3.04	2.54	1.96	1.66	1.70	1.72	-40.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.25	1.34	1.12	0.86	0.73	0.74	0.75	-40.0%
CO ₂ / population (tCO ₂ per capita)	11.63	7.73	7.08	7.51	7.27	7.72	8.08	-30.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	67	60	63	62	66	69	-31.2%
Population	100	100	99	98	98	99	99	-1.0%
GDP per population (GDP per capita)	100	62	68	94	108	112	116	15.9%
Energy intensity (TPES/GDP)	100	112	97	76	65	67	67	-33.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	93	90	90	89	90	-10.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	849.0	584.0	1 290.2	19.7	2 742.8	-31.2%
Main activity producer elec. and heat	487.4	34.8	494.1	0.0	1 016.4	-35.7%
Unallocated autoproducers	118.8	32.0	216.1	16.2	383.0	-3.2%
Other energy industry own use	12.1	50.7	74.6	0.7	138.1	21.5%
Manufacturing industries and construction	190.3	87.5	198.0	2.3	478.1	-37.3%
Transport	0.1	295.0	89.6	-	384.8	-14.9%
<i>of which: road</i>	-	255.0	1.5	-	256.4	-10.3%
Other	40.2	84.0	217.7	0.6	342.6	-49.8%
<i>of which: residential</i>	21.9	24.6	179.1	-	225.7	-17.6%
Reference Approach	908.8	629.7	1 316.9	19.7	2 875.1	-31.1%
Diff. due to losses and/or transformation	49.4	42.3	26.5	-	118.2	
Statistical differences	10.5	3.4	0.3	-0.0	14.1	
<i>Memo: international marine bunkers</i>	-	23.9	-	-	23.9	148.7%
<i>Memo: international aviation bunkers</i>	-	27.4	-	-	27.4	-35.3%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - gas	494.1	-11.8%	12.0	12.0
Main activity prod. elec. and heat - coal/peat	487.4	-30.4%	11.8	23.8
Road - oil	255.0	-9.8%	6.2	30.0
Unallocated autoproducers - gas	216.1	-0.8%	5.2	35.2
Manufacturing industries - gas	198.0	-17.4%	4.8	40.1
Manufacturing industries - coal/peat	190.3	-36.5%	4.6	44.7
Residential - gas	179.1	20.1%	4.3	49.0
Unallocated autoproducers - coal/peat	118.8	20.2%	2.9	51.9
Other transport - gas	88.2	5.9%	2.1	54.0
<i>Memo: total CO₂ from fuel combustion</i>	<i>2 742.8</i>	<i>-31.2%</i>	<i>66.6</i>	<i>66.6</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Africa

Figure 1. CO₂ emissions by fuel

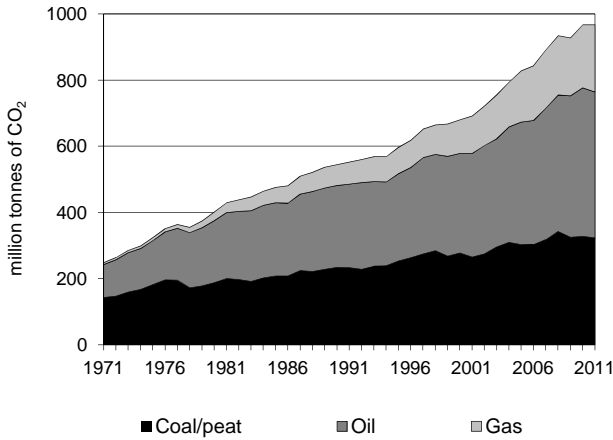


Figure 2. CO₂ emissions by sector

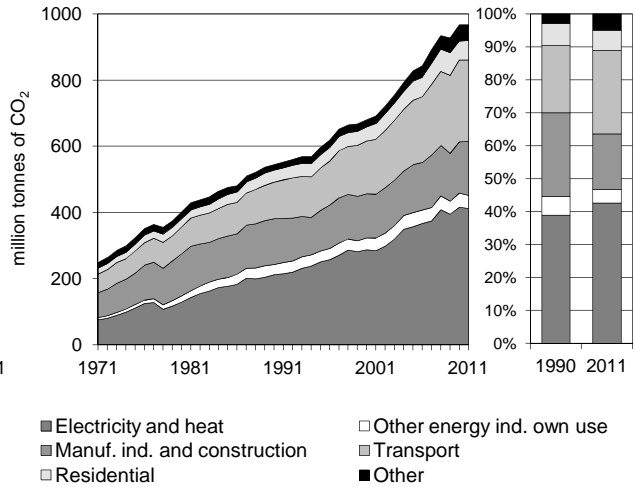


Figure 3. Reference vs Sectoral Approach

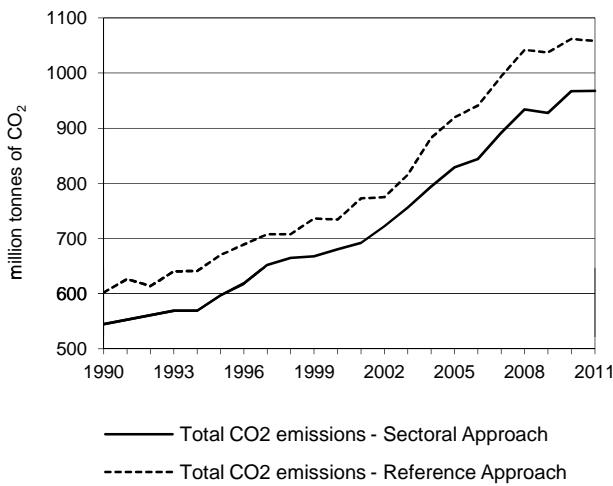


Figure 4. Electricity generation by fuel

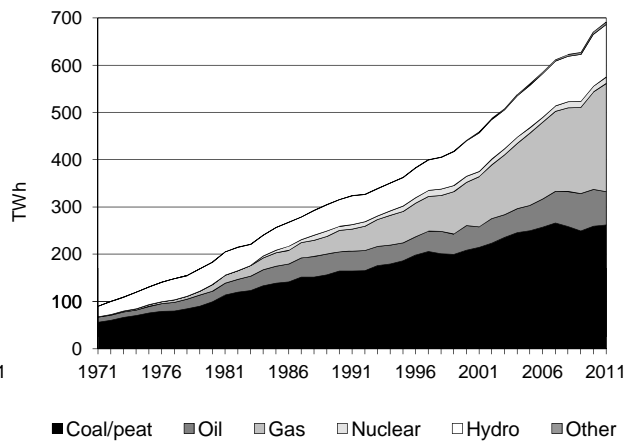


Figure 5. Changes in selected indicators *

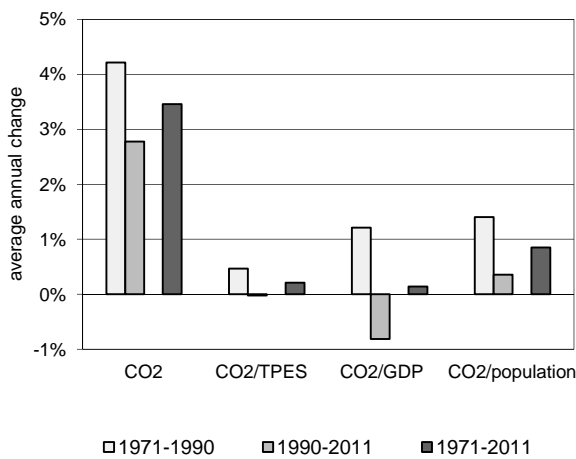
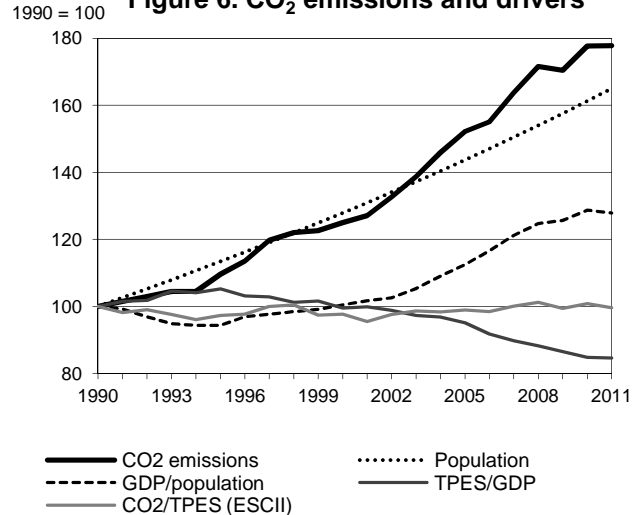


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Africa

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	544.5	596.8	680.5	828.7	927.8	967.2	967.8	77.7%
TPES (PJ)	16 431	18 512	21 020	25 272	28 164	28 942	29 322	78.5%
GDP (billion 2005 USD)	623.9	661.7	788.2	989.0	1 198.7	1 252.5	1 267.5	103.1%
GDP PPP (billion 2005 USD)	1 334.6	1 429.0	1 714.9	2 157.6	2 642.9	2 770.1	2 814.5	110.9%
Population (millions)	633.5	718.5	810.2	910.3	998.3	1 021.6	1 045.2	65.0%
CO ₂ / TPES (tCO ₂ per TJ)	33.1	32.2	32.4	32.8	32.9	33.4	33.0	-0.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.87	0.90	0.86	0.84	0.77	0.77	0.76	-12.5%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.41	0.42	0.40	0.38	0.35	0.35	0.34	-15.7%
CO ₂ / population (tCO ₂ per capita)	0.86	0.83	0.84	0.91	0.93	0.95	0.93	7.7%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	110	125	152	170	178	178	77.7%
Population	100	113	128	144	158	161	165	65.0%
GDP per population (GDP per capita)	100	94	100	113	126	129	128	27.8%
Energy intensity (TPES/GDP)	100	105	100	95	87	85	85	-15.4%
Carbon intensity: ESCII (CO ₂ /TPES)	100	97	98	99	99	101	100	-0.4%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	322.9	442.0	202.9	-	967.8	77.7%
Main activity producer elec. and heat	235.6	44.3	113.9	-	393.8	97.3%
Unallocated autoproducers	9.4	7.3	1.7	-	18.4	48.7%
Other energy industry own use	0.1	13.5	26.3	-	39.9	27.9%
Manufacturing industries and construction	57.8	61.4	43.7	-	163.0	18.0%
Transport	0.1	243.4	2.5	-	245.9	121.9%
<i>of which: road</i>	-	232.7	0.9	-	233.6	121.0%
Other	19.9	72.2	14.7	-	106.7	103.9%
<i>of which: residential</i>	9.3	37.5	12.4	-	59.2	63.0%
Reference Approach	415.5	429.3	213.6	-	1 058.3	75.8%
Diff. due to losses and/or transformation	81.0	- 11.4	10.5	-	80.2	
Statistical differences	11.5	- 1.4	0.2	-	10.3	
<i>Memo: international marine bunkers</i>	-	18.5	-	-	18.5	12.4%
<i>Memo: international aviation bunkers</i>	-	20.4	-	-	20.4	77.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	235.6	64.3%	8.7	8.7
Road - oil	232.7	120.2%	8.6	17.3
Main activity prod. elec. and heat - gas	113.9	356.4%	4.2	21.5
Manufacturing industries - oil	61.4	14.0%	2.3	23.8
Manufacturing industries - coal/peat	57.8	-16.8%	2.1	25.9
Main activity prod. elec. and heat - oil	44.3	41.9%	1.6	27.5
Manufacturing industries - gas	43.7	197.4%	1.6	29.1
Residential - oil	37.5	36.5%	1.4	30.5
Non-specified other - oil	34.6	226.5%	1.3	31.8
<i>Memo: total CO₂ from fuel combustion</i>	<i>967.8</i>	<i>77.7%</i>	<i>35.7</i>	<i>35.7</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Asia (excluding China)

Figure 1. CO₂ emissions by fuel

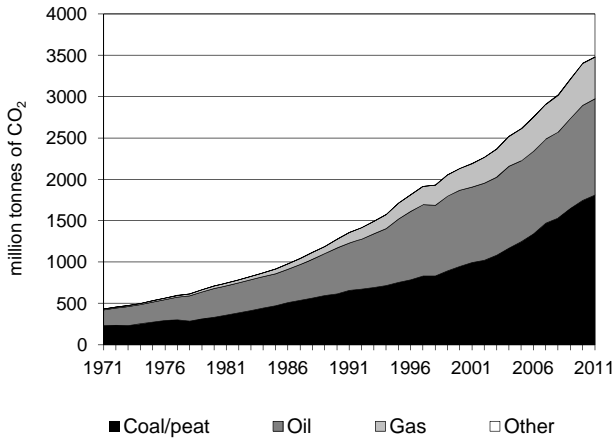


Figure 2. CO₂ emissions by sector

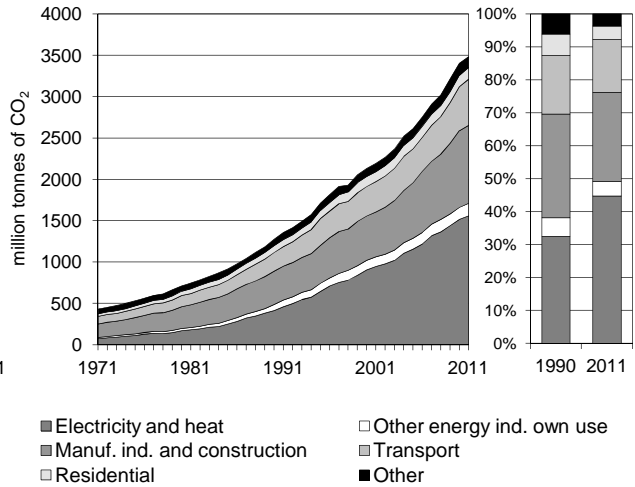


Figure 3. Reference vs Sectoral Approach

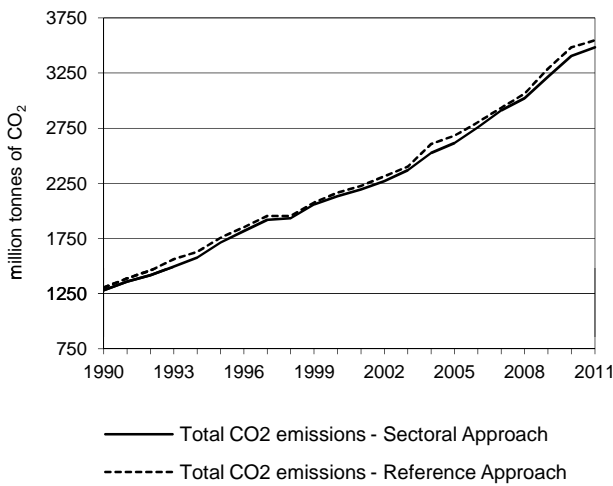


Figure 4. Electricity generation by fuel

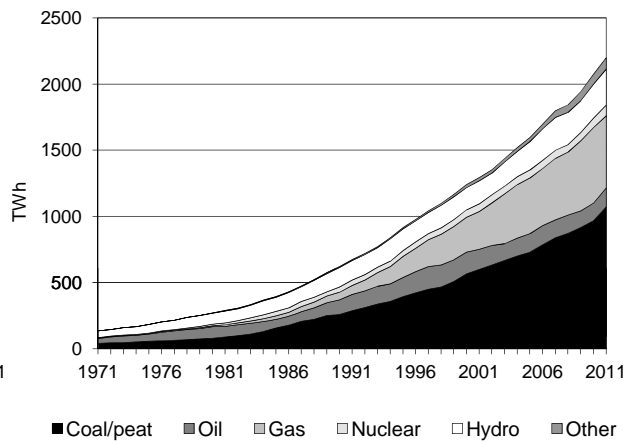


Figure 5. Changes in selected indicators *

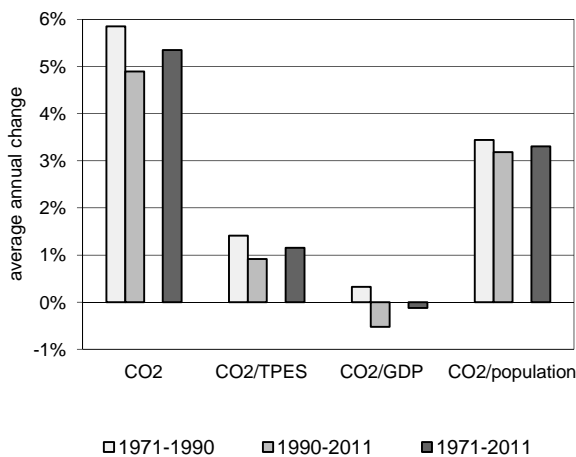
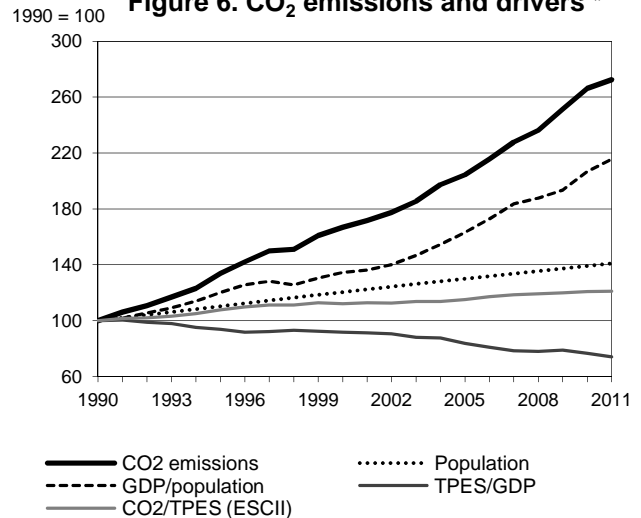


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Asia (excluding China)

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	1 278.6	1 713.0	2 132.2	2 614.8	3 214.8	3 404.7	3 484.0	172.5%
TPES (PJ)	29 640	36 822	44 049	52 671	62 163	65 316	66 696	125.0%
GDP (billion 2005 USD)	1 125.2	1 507.9	1 843.5	2 389.3	2 955.4	3 206.6	3 386.5	201.0%
GDP PPP (billion 2005 USD)	2 876.7	3 806.3	4 657.2	6 102.3	7 641.3	8 274.6	8 749.2	204.1%
Population (millions)	1 639.6	1 806.9	1 974.3	2 131.0	2 251.6	2 282.0	2 312.7	41.0%
CO ₂ / TPES (tCO ₂ per TJ)	43.1	46.5	48.4	49.6	51.7	52.1	52.2	21.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.14	1.14	1.16	1.09	1.09	1.06	1.03	-9.5%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.44	0.45	0.46	0.43	0.42	0.41	0.40	-10.4%
CO ₂ / population (tCO ₂ per capita)	0.78	0.95	1.08	1.23	1.43	1.49	1.51	93.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	134	167	205	251	266	272	172.5%
Population	100	110	120	130	137	139	141	41.1%
GDP per population (GDP per capita)	100	120	134	163	193	207	216	115.6%
Energy intensity (TPES/GDP)	100	94	92	84	79	77	74	-26.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	108	112	115	120	121	121	21.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	1 810.7	1 164.8	504.5	4.0	3 484.0	172.5%
Main activity producer elec. and heat	1 038.9	96.4	222.5	1.0	1 358.8	245.2%
Unallocated autoproducers	148.2	22.5	25.7	3.0	199.5	776.1%
Other energy industry own use	10.2	76.5	67.6	-	154.3	116.5%
Manufacturing industries and construction	561.5	252.9	129.4	0.0	943.9	134.4%
Transport	0.2	537.8	19.2	-	557.2	145.9%
<i>of which: road</i>	-	495.4	19.2	-	514.6	160.4%
Other	51.7	178.6	40.1	-	270.4	67.2%
<i>of which: residential</i>	18.0	100.7	24.1	-	142.7	70.4%
Reference Approach	1 872.8	1 160.8	510.4	4.0	3 548.1	172.2%
Diff. due to losses and/or transformation	10.1	20.2	8.5	-	38.8	
Statistical differences	52.0	- 24.2	- 2.6	-	25.3	
<i>Memo: international marine bunkers</i>	-	146.5	-	-	146.5	226.6%
<i>Memo: international aviation bunkers</i>	-	68.4	-	-	68.4	198.3%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	1 038.9	281.7%	17.2	17.2
Manufacturing industries - coal/peat	561.5	125.9%	9.3	26.5
Road - oil	495.4	150.6%	8.2	34.8
Manufacturing industries - oil	252.9	111.0%	4.2	39.0
Main activity prod. elec. and heat - gas	222.5	548.9%	3.7	42.6
Unallocated autoproducers - coal/peat	148.2	799.7%	2.5	45.1
Manufacturing industries - gas	129.4	279.3%	2.1	47.2
Residential - oil	100.7	54.3%	1.7	48.9
Main activity prod. elec. and heat - oil	96.4	10.8%	1.6	50.5
<i>Memo: total CO₂ from fuel combustion</i>	<i>3 484.0</i>	<i>172.5%</i>	<i>57.8</i>	<i>57.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

China (incl. Hong Kong)

Figure 1. CO₂ emissions by fuel

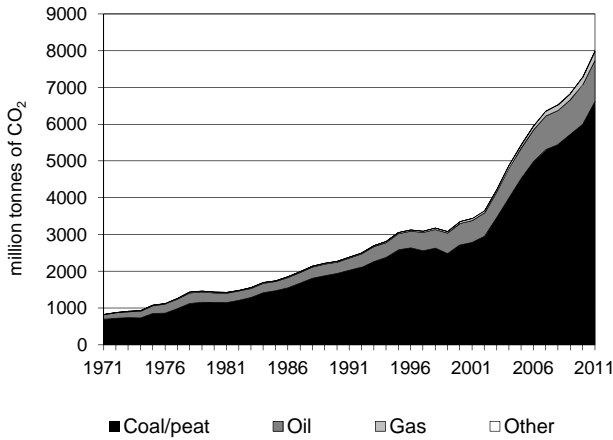


Figure 2. CO₂ emissions by sector

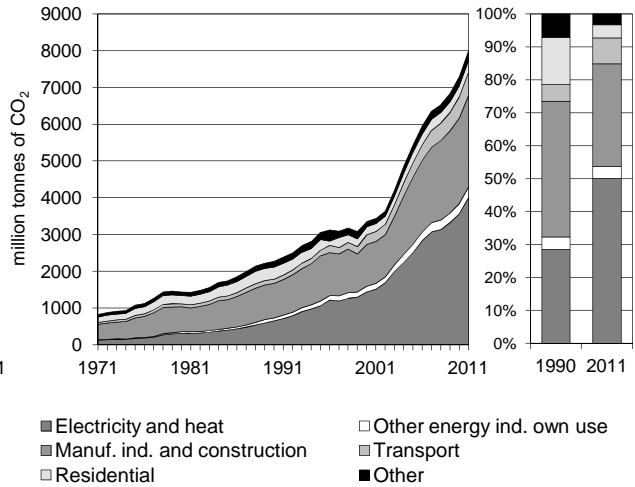


Figure 3. Reference vs Sectoral Approach

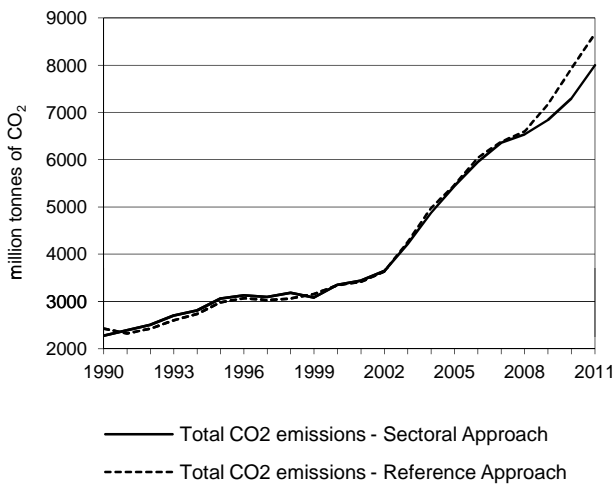


Figure 4. Electricity generation by fuel

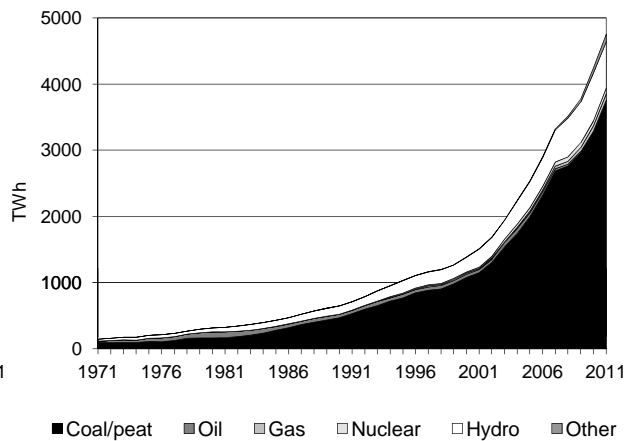


Figure 5. Changes in selected indicators *

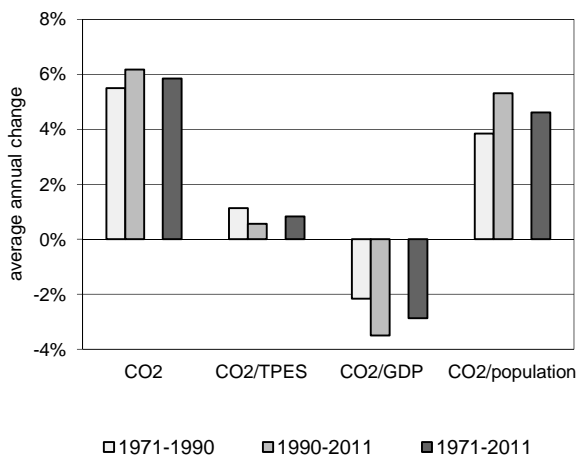
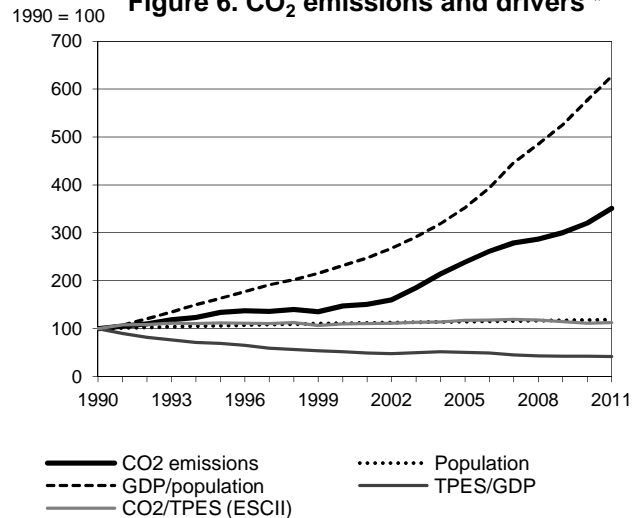


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

China (incl. Hong Kong)

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2 277.7	3 057.6	3 350.0	5 443.9	6 838.6	7 294.1	7 999.6	251.2%
TPES (PJ)	36 816	44 175	49 184	74 874	96 341	105 950	114 828	211.9%
GDP (billion 2005 USD)	625.9	1 067.1	1 564.7	2 438.5	3 682.6	4 058.1	4 425.8	607.1%
GDP PPP (billion 2005 USD)	1 386.5	2 405.3	3 570.0	5 612.5	8 544.7	9 423.2	10 286.3	641.9%
Population (millions)	1 140.9	1 211.0	1 269.3	1 310.5	1 338.4	1 344.9	1 351.2	18.4%
CO ₂ / TPES (tCO ₂ per TJ)	61.9	69.2	68.1	72.7	71.0	68.8	69.7	12.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	3.64	2.87	2.14	2.23	1.86	1.80	1.81	-50.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.64	1.27	0.94	0.97	0.80	0.77	0.78	-52.7%
CO ₂ / population (tCO ₂ per capita)	2.00	2.52	2.64	4.15	5.11	5.42	5.92	196.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	134	147	239	300	320	351	251.2%
Population	100	106	111	115	117	118	118	18.4%
GDP per population (GDP per capita)	100	163	231	352	525	577	626	526.4%
Energy intensity (TPES/GDP)	100	69	52	50	42	42	42	-58.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	112	110	118	115	111	113	12.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	6 624.2	1 111.5	243.5	20.3	7 999.6	251.2%
Main activity producer elec. and heat	3 866.3	9.6	54.3	-	3 930.1	513.8%
Unallocated autoproducers	52.3	8.2	-	20.3	80.8	640.6%
Other energy industry own use	184.6	69.2	31.3	-	285.1	233.2%
Manufacturing industries and construction	2 196.8	228.2	69.7	-	2 494.7	165.9%
Transport	12.4	593.7	22.7	-	628.8	455.4%
<i>of which: road</i>	-	477.3	22.3	-	499.6	699.6%
Other	311.8	202.7	65.6	-	580.1	18.5%
<i>of which: residential</i>	189.4	79.2	51.7	-	320.3	-2.5%
Reference Approach	7 237.7	1 161.5	248.6	20.5	8 668.3	257.4%
Diff. due to losses and/or transformation	159.1	43.7	4.8	-	207.6	
Statistical differences	454.5	6.3	0.2	0.1	461.2	
<i>Memo: international marine bunkers</i>	-	58.2	-	-	58.2	559.7%
<i>Memo: international aviation bunkers</i>	-	35.8	-	-	35.8	415.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	3 866.3	549.2%	33.3	33.3
Manufacturing industries - coal/peat	2 196.8	162.1%	18.9	52.2
Road - oil	477.3	663.9%	4.1	56.3
Manufacturing industries - oil	228.2	161.7%	2.0	58.2
Residential - coal/peat	189.4	-40.2%	1.6	59.9
Other energy industry - coal/peat	184.6	263.9%	1.6	61.5
Non-specified other - oil	123.5	112.8%	1.1	62.5
Non-specified other sectors - coal/peat	122.4	19.6%	1.1	63.6
Other transport - oil	116.4	828.2%	1.0	64.6
<i>Memo: total CO₂ from fuel combustion</i>	<i>7 999.6</i>	<i>251.2%</i>	<i>68.8</i>	<i>68.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Non-OECD Americas

Figure 1. CO₂ emissions by fuel

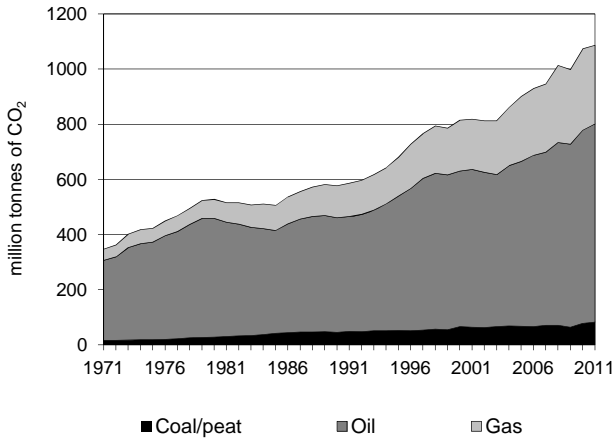


Figure 2. CO₂ emissions by sector

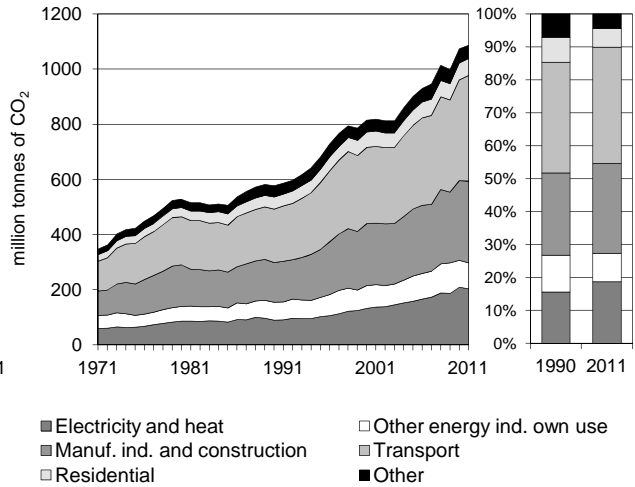


Figure 3. Reference vs Sectoral Approach

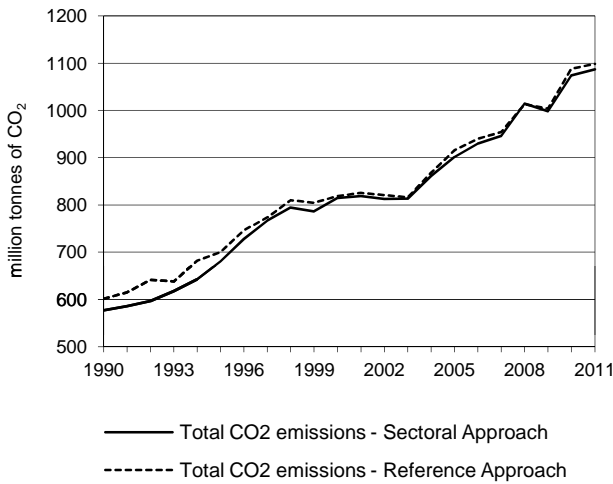


Figure 4. Electricity generation by fuel

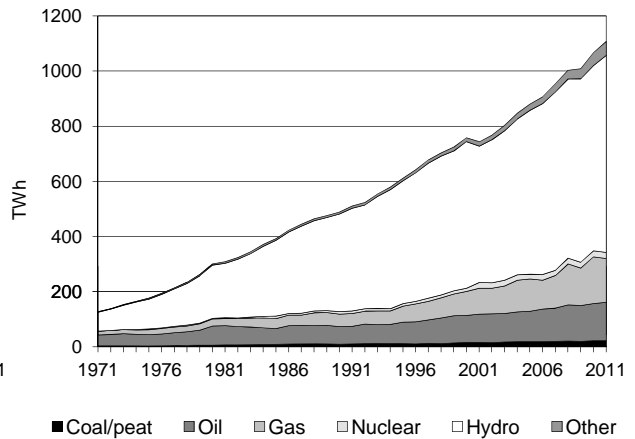


Figure 5. Changes in selected indicators *

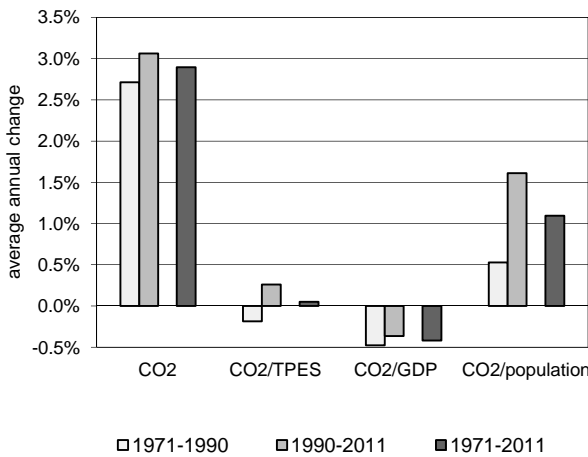
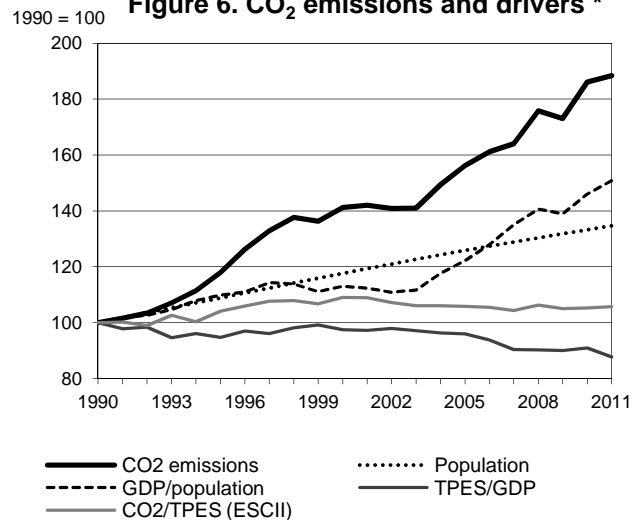


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Non-OECD Americas

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	576.9	680.3	814.8	901.3	998.5	1 073.8	1 086.8	88.4%
TPES (PJ)	13 835	15 675	17 929	20 425	22 814	24 464	24 669	78.3%
GDP (billion 2005 USD)	1 147.6	1 357.4	1 512.0	1 748.8	2 075.8	2 203.1	2 298.2	100.3%
GDP PPP (billion 2005 USD)	2 166.4	2 590.5	2 881.1	3 331.7	3 966.9	4 214.0	4 402.8	103.2%
Population (millions)	341.7	371.8	401.8	429.9	450.2	455.2	460.2	34.7%
CO ₂ / TPES (tCO ₂ per TJ)	41.7	43.4	45.4	44.1	43.8	43.9	44.1	5.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.50	0.50	0.54	0.52	0.48	0.49	0.47	-5.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.27	0.26	0.28	0.27	0.25	0.25	0.25	-7.3%
CO ₂ / population (tCO ₂ per capita)	1.69	1.83	2.03	2.10	2.22	2.36	2.36	39.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	118	141	156	173	186	188	88.4%
Population	100	109	118	126	132	133	135	34.7%
GDP per population (GDP per capita)	100	110	113	122	139	146	151	50.9%
Energy intensity (TPES/GDP)	100	95	97	96	90	91	88	-12.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	104	109	106	105	105	106	5.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	82.9	718.9	284.9	-	1 086.8	88.4%
Main activity producer elec. and heat	14.9	84.8	67.7	-	167.4	144.5%
Unallocated autoproducers	10.4	12.1	14.0	-	36.5	69.1%
Other energy industry own use	3.9	34.6	55.4	-	93.9	45.5%
Manufacturing industries and construction	53.3	138.1	104.8	-	296.2	105.9%
Transport	-	369.4	14.0	-	383.3	97.7%
<i>of which: road</i>	-	341.2	11.4	-	352.6	100.8%
Other	0.4	80.0	29.0	-	109.5	29.5%
<i>of which: residential</i>	0.3	36.9	24.1	-	61.3	39.7%
Reference Approach	87.1	721.9	289.6	-	1 098.6	82.7%
Diff. due to losses and/or transformation	4.3	7.1	5.1	-	16.4	
Statistical differences	- 0.1	- 4.1	- 0.4	-	- 4.6	
<i>Memo: international marine bunkers</i>	-	45.1	-	-	45.1	129.2%
<i>Memo: international aviation bunkers</i>	-	20.6	-	-	20.6	138.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	341.2	94.8%	14.4	14.4
Manufacturing industries - oil	138.1	75.7%	5.8	20.2
Manufacturing industries - gas	104.8	163.9%	4.4	24.6
Main activity prod. elec. and heat - oil	84.8	138.7%	3.6	28.1
Main activity prod. elec. and heat - gas	67.7	161.7%	2.8	31.0
Other energy industry own use - gas	55.4	84.1%	2.3	33.3
Manufacturing industries - coal/peat	53.3	108.7%	2.2	35.6
Non-specified other - oil	43.1	20.1%	1.8	37.4
Residential - oil	36.9	9.3%	1.6	38.9
<i>Memo: total CO₂ from fuel combustion</i>	<i>1 086.8</i>	<i>88.4%</i>	<i>45.7</i>	<i>45.7</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Middle East

Figure 1. CO₂ emissions by fuel

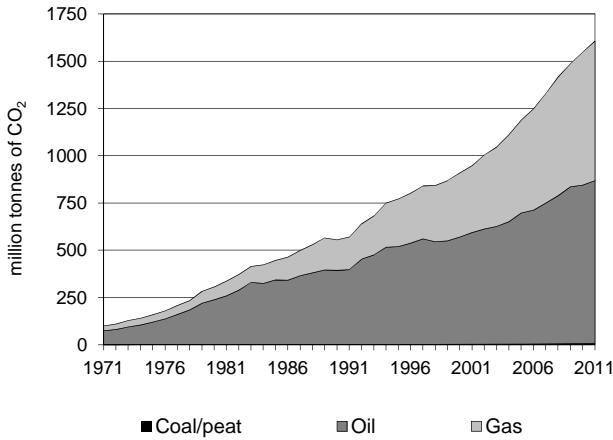


Figure 2. CO₂ emissions by sector

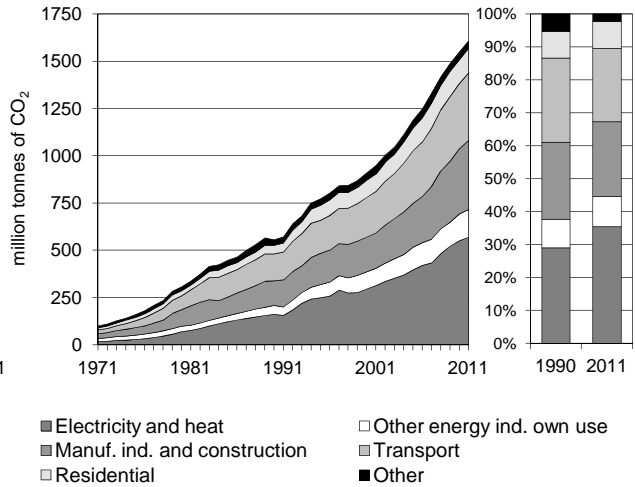


Figure 3. Reference vs Sectoral Approach

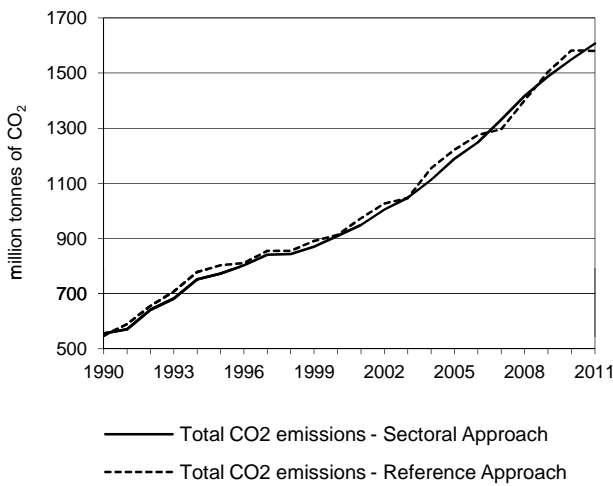


Figure 4. Electricity generation by fuel

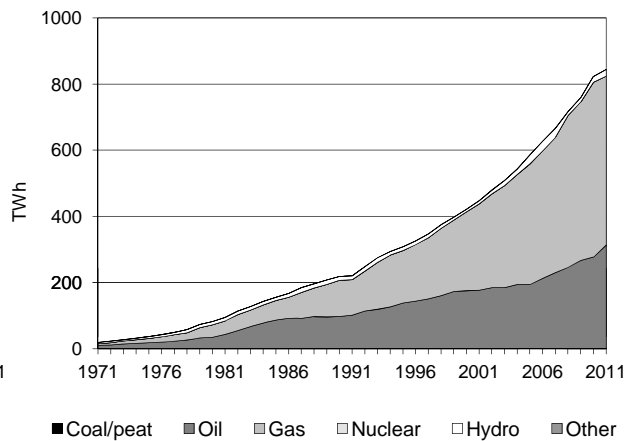


Figure 5. Changes in selected indicators *

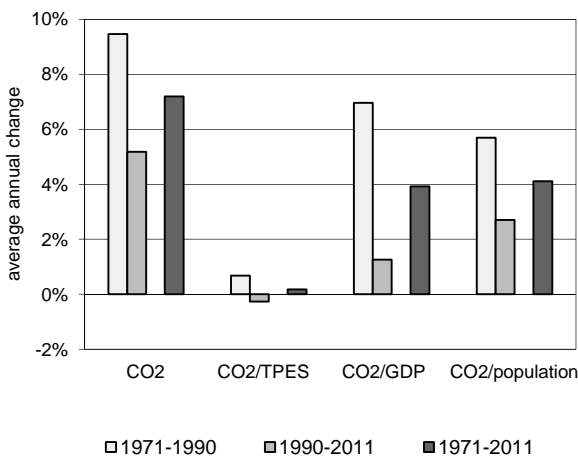
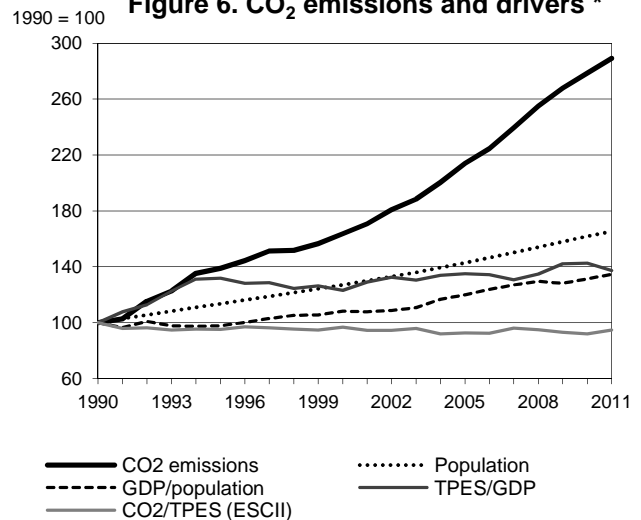


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Middle East

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	555.7	771.9	909.6	1 189.2	1 488.1	1 548.9	1 606.9	189.1%
TPES (PJ)	8 861	12 949	14 993	20 444	25 502	26 850	27 080	205.6%
GDP (billion 2005 USD)	554.9	629.5	773.1	967.8	1 145.4	1 201.9	1 271.3	129.1%
GDP PPP (billion 2005 USD)	1 118.8	1 241.3	1 537.4	1 912.6	2 264.2	2 376.6	2 488.5	122.4%
Population (millions)	126.3	143.4	160.4	180.3	199.6	204.3	208.7	65.2%
CO ₂ / TPES (tCO ₂ per TJ)	62.7	59.6	60.7	58.2	58.4	57.7	59.3	-5.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.00	1.23	1.18	1.23	1.30	1.29	1.26	26.2%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.50	0.62	0.59	0.62	0.66	0.65	0.65	30.0%
CO ₂ / population (tCO ₂ per capita)	4.40	5.38	5.67	6.60	7.46	7.58	7.70	75.1%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	139	164	214	268	279	289	189.2%
Population	100	114	127	143	158	162	165	65.2%
GDP per population (GDP per capita)	100	98	108	120	128	131	135	34.6%
Energy intensity (TPES/GDP)	100	132	123	135	142	143	137	37.4%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	97	93	93	92	95	-5.4%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	9.3	858.9	738.6	-	1 606.9	189.1%
Main activity producer elec. and heat	-	265.4	232.1	-	497.5	267.4%
Unallocated autoproducers	1.5	24.9	46.1	-	72.5	177.2%
Other energy industry own use	1.0	37.0	108.3	-	146.3	209.3%
Manufacturing industries and construction	6.8	121.2	237.1	-	365.1	180.0%
Transport	-	344.1	13.2	-	357.3	151.1%
<i>of which: road</i>	-	338.3	12.3	-	350.6	149.3%
Other	0.0	66.4	101.8	-	168.2	126.7%
<i>of which: residential</i>	0.0	44.2	87.1	-	131.3	194.0%
Reference Approach	11.2	820.9	748.6	-	1 580.8	188.7%
Diff. due to losses and/or transformation	0.7	- 20.7	10.8	-	- 9.1	
Statistical differences	1.2	- 17.4	- 0.9	-	- 17.0	
<i>Memo: international marine bunkers</i>	-	69.0	-	-	69.0	120.7%
<i>Memo: international aviation bunkers</i>	-	34.7	-	-	34.7	56.6%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	338.3	140.5%	15.9	15.9
Main activity prod. elec. and heat - oil	265.4	227.2%	12.5	28.4
Manufacturing industries - gas	237.1	320.5%	11.1	39.5
Main activity prod. elec. and heat - gas	232.1	327.5%	10.9	50.4
Manufacturing industries - oil	121.2	65.2%	5.7	56.1
Other energy industry own use - gas	108.3	404.8%	5.1	61.2
Residential - gas	87.1	+	4.1	65.3
Unallocated autoproducers - gas	46.1	113.1%	2.2	67.4
Residential - oil	44.2	14.5%	2.1	69.5
<i>Memo: total CO₂ from fuel combustion</i>	<i>1 606.9</i>	<i>189.1%</i>	<i>75.5</i>	<i>75.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

COUNTRY TABLES

Albania

Figure 1. CO₂ emissions by fuel

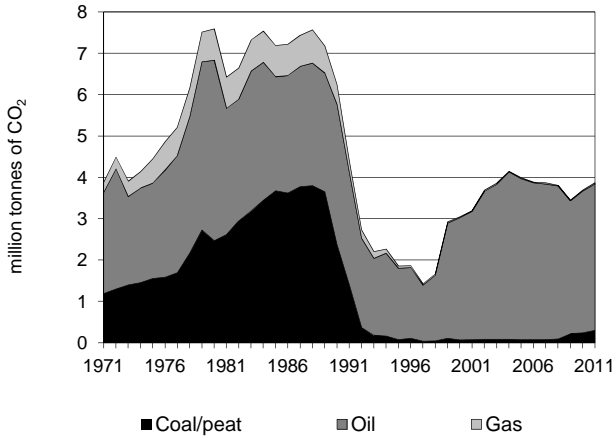


Figure 2. CO₂ emissions by sector

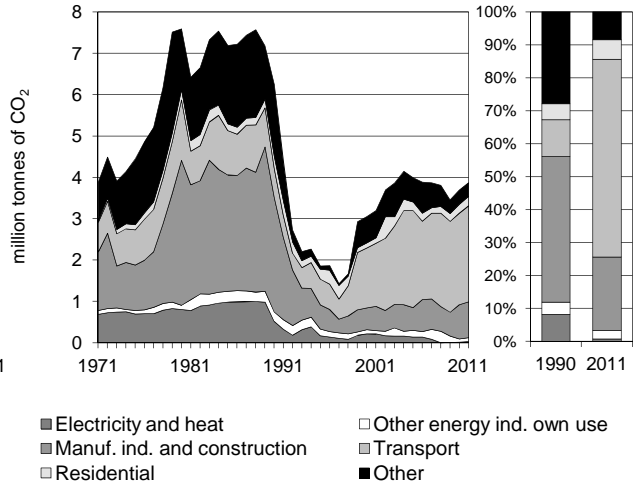


Figure 3. Reference vs Sectoral Approach

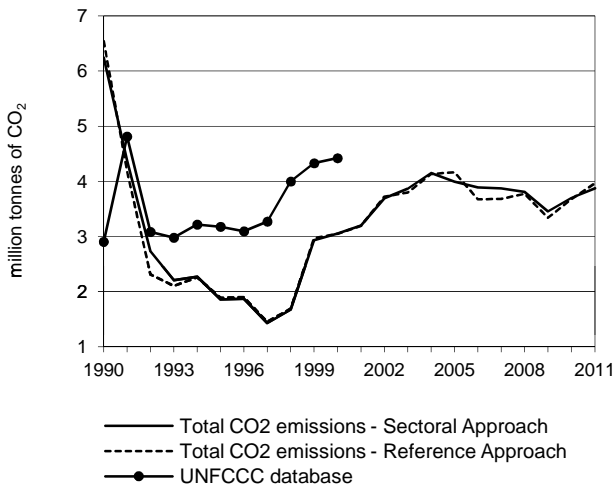


Figure 4. Electricity generation by fuel

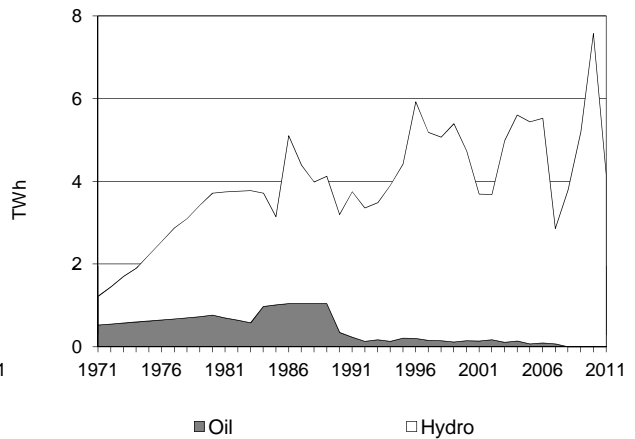


Figure 5. Changes in selected indicators *

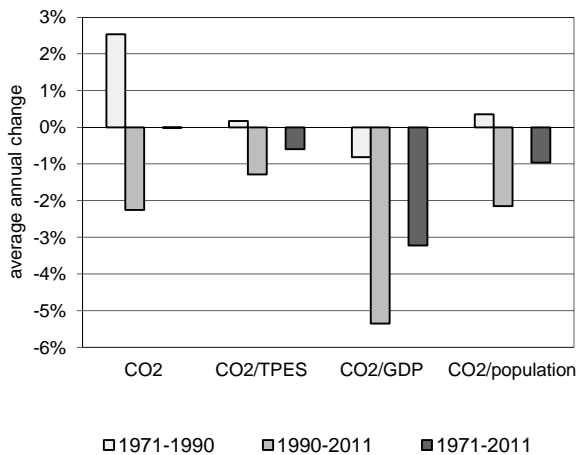
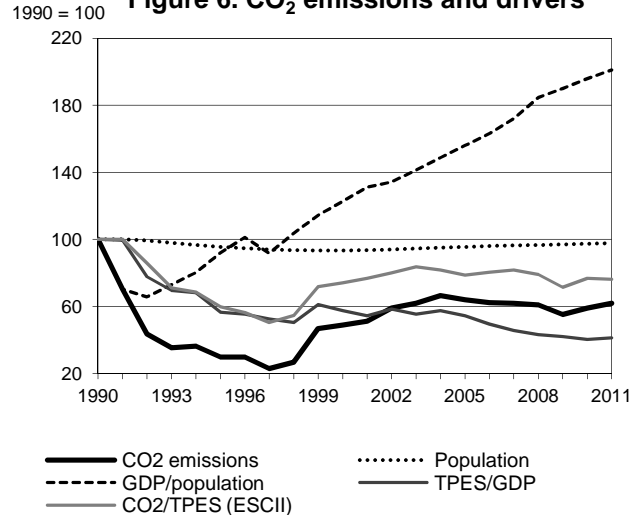


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Albania

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	6.25	1.86	3.05	3.99	3.45	3.69	3.87	-38.0%
TPES (PJ)	112	56	74	91	87	86	91	-18.7%
GDP (billion 2005 USD)	5.62	4.94	6.44	8.38	10.36	10.73	11.05	96.6%
GDP PPP (billion 2005 USD)	12.86	11.30	14.74	19.17	23.72	24.55	25.28	96.5%
Population (millions)	3.29	3.14	3.07	3.14	3.19	3.20	3.22	-2.2%
CO ₂ / TPES (tCO ₂ per TJ)	55.8	33.4	41.3	43.9	39.9	42.9	42.6	-23.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.11	0.38	0.47	0.48	0.33	0.34	0.35	-68.5%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.49	0.16	0.21	0.21	0.15	0.15	0.15	-68.5%
CO ₂ / population (tCO ₂ per capita)	1.90	0.59	0.99	1.27	1.08	1.15	1.20	-36.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	30	49	64	55	59	62	-38.0%
Population	100	96	93	96	97	97	98	-2.2%
GDP per population (GDP per capita)	100	92	123	156	190	196	201	101.0%
Energy intensity (TPES/GDP)	100	57	58	55	42	40	41	-58.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	60	74	79	71	77	76	-23.8%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.30	3.54	0.03	-	3.87	-38.0%
Main activity producer elec. and heat	-	0.03	-	-	0.03	-94.4%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	0.07	0.02	-	0.10	-57.5%
Manufacturing industries and construction	0.29	0.58	-	-	0.87	-68.6%
Transport	-	2.32	-	-	2.32	231.8%
<i>of which: road</i>	-	2.25	-	-	2.25	221.5%
Other	0.01	0.55	0.00	-	0.56	-72.7%
<i>of which: residential</i>	-	0.23	-	-	0.23	-23.6%
Reference Approach	0.30	3.64	0.03	-	3.96	-39.4%
Diff. due to losses and/or transformation	-	0.02	-	-	0.02	
Statistical differences	-	0.08	0.00	-	0.08	
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.06	-	-	0.06	x

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	2.25	221.5%	27.6	27.6
Manufacturing industries - oil	0.58	-65.6%	7.0	34.6
Non-specified other - oil	0.31	x	3.9	38.5
Manufacturing industries - coal/peat	0.29	-58.9%	3.6	42.0
Residential - oil	0.23	-17.8%	2.8	44.9
Other energy industry own use - oil	0.07	-68.1%	0.9	45.8
Other transport - oil	0.07	x	0.9	46.6
Main activity prod. elec. and heat - oil	0.03	-94.4%	0.4	47.0
Other energy industry own use - gas	0.02	x	0.3	47.3
<i>Memo: total CO₂ from fuel combustion</i>	<i>3.87</i>	<i>-38.0%</i>	<i>47.5</i>	<i>47.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Algeria

Figure 1. CO₂ emissions by fuel

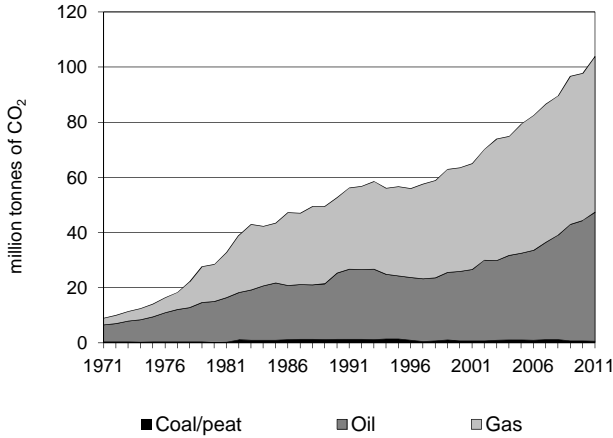


Figure 2. CO₂ emissions by sector

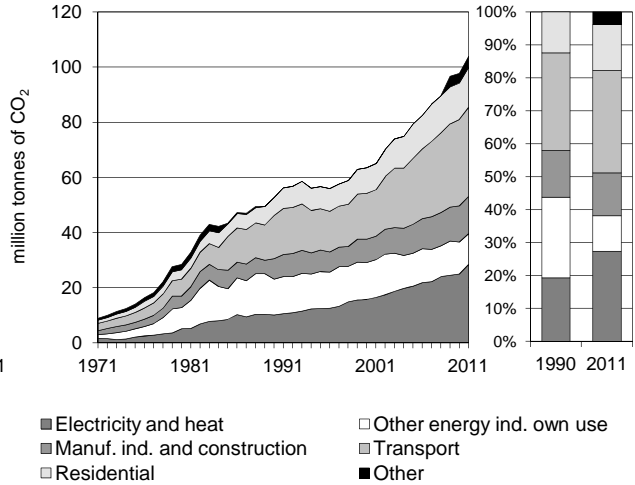


Figure 3. Reference vs Sectoral Approach

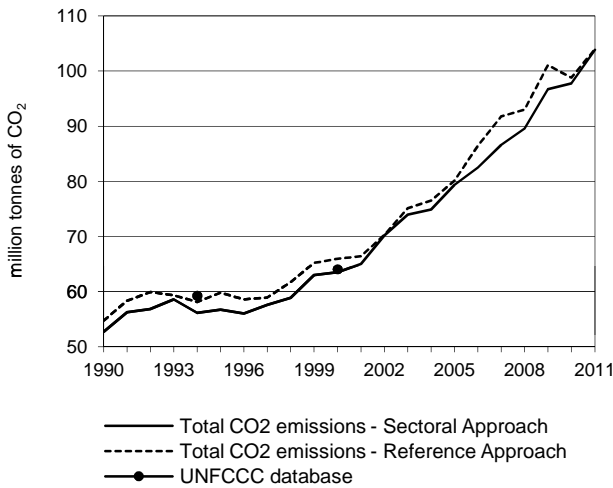


Figure 4. Electricity generation by fuel

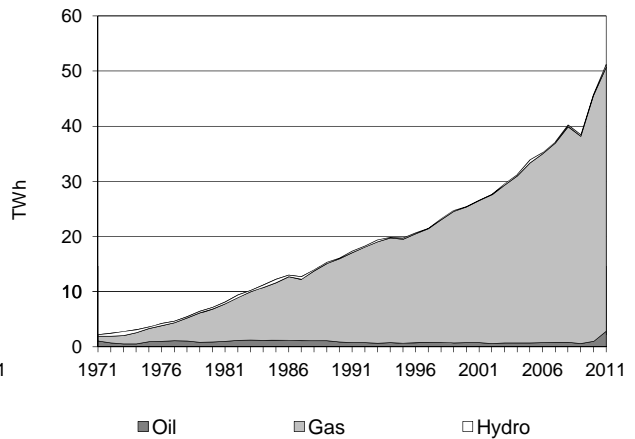


Figure 5. Changes in selected indicators *

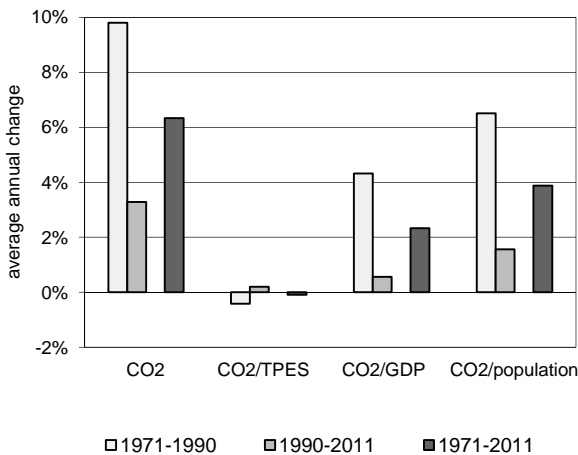
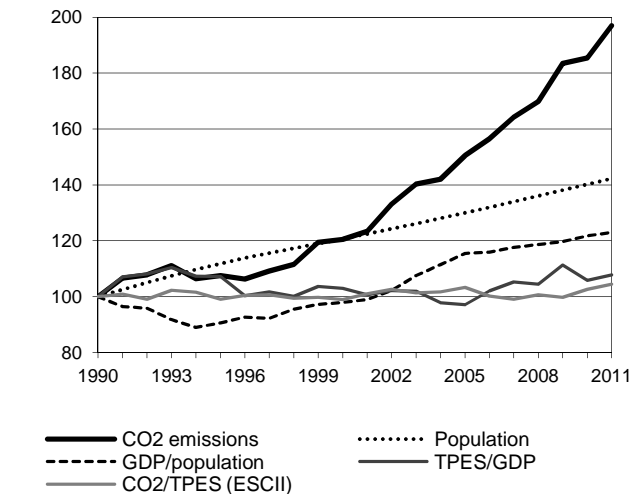


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Algeria

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	52.73	56.72	63.52	79.37	96.73	97.77	103.88	97.0%
TPES (PJ)	929	1 009	1 130	1 354	1 709	1 679	1 752	88.6%
GDP (billion 2005 USD)	68.21	69.09	80.60	102.34	112.74	116.46	119.37	75.0%
GDP PPP (billion 2005 USD)	157.14	159.17	185.69	235.76	259.72	268.30	275.00	75.0%
Population (millions)	25.30	28.29	30.53	32.89	34.95	35.47	35.98	42.2%
CO ₂ / TPES (tCO ₂ per TJ)	56.8	56.2	56.2	58.6	56.6	58.2	59.3	4.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.77	0.82	0.79	0.78	0.86	0.84	0.87	12.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.34	0.36	0.34	0.34	0.37	0.36	0.38	12.6%
CO ₂ / population (tCO ₂ per capita)	2.08	2.00	2.08	2.41	2.77	2.76	2.89	38.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	108	120	151	183	185	197	97.0%
Population	100	112	121	130	138	140	142	42.2%
GDP per population (GDP per capita)	100	91	98	115	120	122	123	23.1%
Energy intensity (TPES/GDP)	100	107	103	97	111	106	108	7.8%
Carbon intensity: ESCII (CO ₂ /TPES)	100	99	99	103	100	103	104	4.4%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.59	46.82	56.47	-	103.88	97.0%
Main activity producer elec. and heat	-	0.47	25.91	-	26.38	179.4%
Unallocated autoproducers	-	2.09	-	-	2.09	189.0%
Other energy industry own use	-	2.52	8.61	-	11.13	-13.9%
Manufacturing industries and construction	0.59	3.90	9.02	-	13.51	81.3%
Transport	-	30.75	1.59	-	32.34	106.6%
<i>of which: road</i>	-	30.74	-	-	30.74	105.4%
Other	-	7.09	11.34	-	18.42	181.9%
<i>of which: residential</i>	-	4.58	9.92	-	14.50	121.8%
Reference Approach	1.31	45.70	56.95	-	103.97	90.0%
Diff. due to losses and/or transformation	0.76	0.01	0.40	-	1.17	
Statistical differences	-0.04	-1.13	0.08	-	-1.08	
<i>Memo: international marine bunkers</i>	-	0.80	-	-	0.80	-41.2%
<i>Memo: international aviation bunkers</i>	-	1.43	-	-	1.43	31.6%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	30.74	105.4%	17.5	17.5
Main activity prod. elec. and heat - gas	25.91	180.1%	14.8	32.3
Residential - gas	9.92	305.9%	5.7	38.0
Manufacturing industries - gas	9.02	122.9%	5.1	43.2
Other energy industry own use - gas	8.61	-21.7%	4.9	48.1
Residential - oil	4.58	11.9%	2.6	50.7
Manufacturing industries - oil	3.90	81.6%	2.2	52.9
Other energy industry own use - oil	2.52	30.9%	1.4	54.4
Non-specified other - oil	2.51	x	1.4	55.8
<i>Memo: total CO₂ from fuel combustion</i>	<i>103.88</i>	<i>97.0%</i>	<i>59.3</i>	<i>59.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Angola

Figure 1. CO₂ emissions by fuel

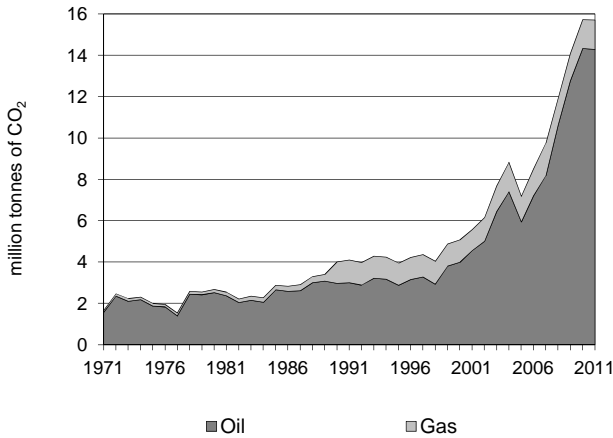


Figure 2. CO₂ emissions by sector

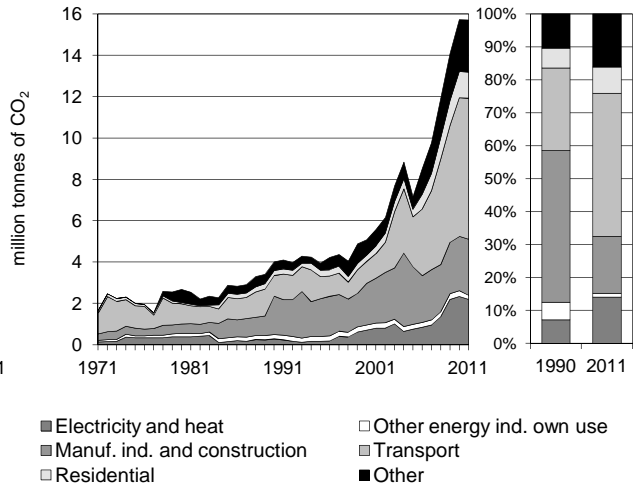


Figure 3. Reference vs Sectoral Approach

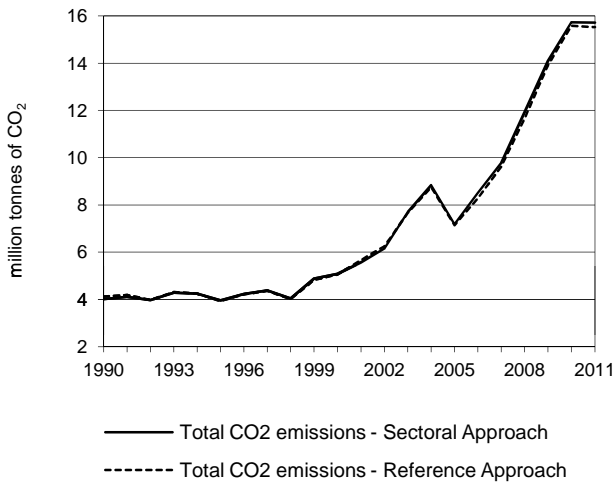


Figure 4. Electricity generation by fuel

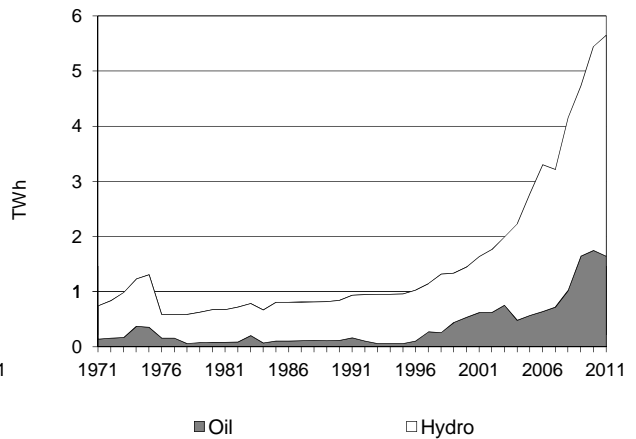


Figure 5. Changes in selected indicators *

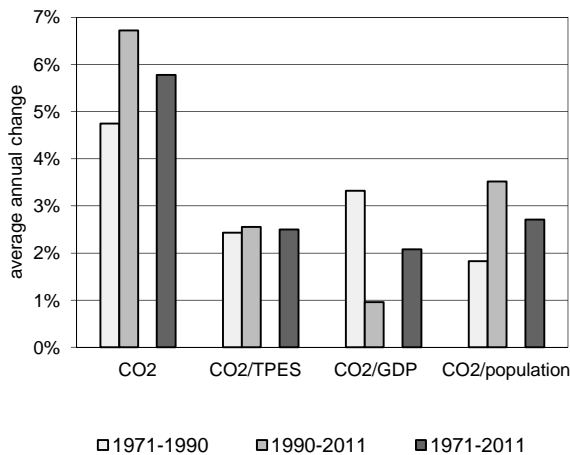
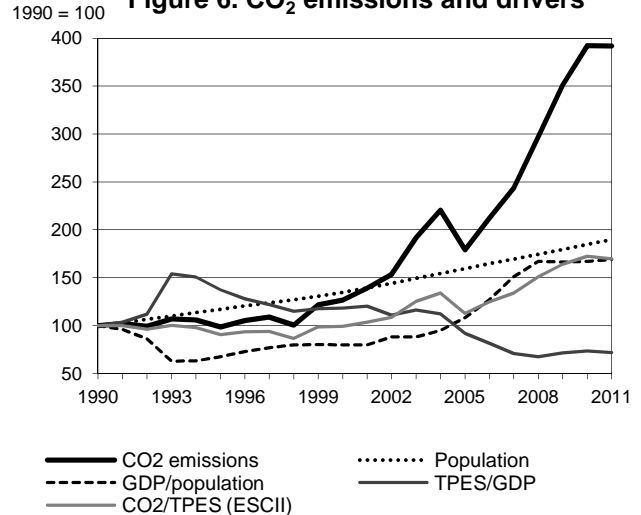


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Angola

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	4.01	3.96	5.08	7.19	14.08	15.73	15.72	292.0%
TPES (PJ)	246	268	314	392	527	560	568	130.8%
GDP (billion 2005 USD)	17.70	14.01	19.09	30.62	52.83	54.63	56.77	220.8%
GDP PPP (billion 2005 USD)	31.97	25.30	34.48	55.32	95.43	98.69	102.55	220.8%
Population (millions)	10.34	12.11	13.93	16.49	18.56	19.08	19.62	89.8%
CO ₂ / TPES (tCO ₂ per TJ)	16.3	14.8	16.2	18.3	26.7	28.1	27.7	69.9%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.23	0.28	0.27	0.23	0.27	0.29	0.28	22.2%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.13	0.16	0.15	0.13	0.15	0.16	0.15	22.2%
CO ₂ / population (tCO ₂ per capita)	0.39	0.33	0.36	0.44	0.76	0.82	0.80	106.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	99	127	179	351	392	392	292.0%
Population	100	117	135	160	180	185	190	89.8%
GDP per population (GDP per capita)	100	68	80	108	166	167	169	69.0%
Energy intensity (TPES/GDP)	100	137	118	92	72	74	72	-28.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	91	99	113	164	173	170	69.9%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	14.29	1.43	-	15.72	292.0%
Main activity producer elec. and heat	-	1.46	-	-	1.46	576.0%
Unallocated autoproducers	-	0.75	-	-	0.75	926.1%
Other energy industry own use	-	0.19	-	-	0.19	-11.9%
Manufacturing industries and construction	-	1.28	1.43	-	2.71	47.0%
Transport	-	6.82	-	-	6.82	578.0%
<i>of which: road</i>	-	6.06	-	-	6.06	502.6%
Other	-	3.79	-	-	3.79	477.4%
<i>of which: residential</i>	-	1.25	-	-	1.25	423.8%
Reference Approach	-	14.09	1.43	-	15.52	276.3%
Diff. due to losses and/or transformation	-	-0.20	-	-	-0.20	
Statistical differences	-	0.00	-	-	0.00	
<i>Memo: international marine bunkers</i>	-	0.52	-	-	0.52	+
<i>Memo: international aviation bunkers</i>	-	0.64	-	-	0.64	-37.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	6.06	502.6%	12.2	12.2
Non-specified other - oil	2.54	508.2%	5.1	17.4
Main activity prod. elec. and heat - oil	1.46	576.0%	2.9	20.3
Manufacturing industries - gas	1.43	38.9%	2.9	23.2
Manufacturing industries - oil	1.28	57.3%	2.6	25.8
Residential - oil	1.25	423.8%	2.5	28.3
Other transport - oil	0.76	x	1.5	29.8
Unallocated autoproducers - oil	0.75	926.1%	1.5	31.3
Other energy industry own use - oil	0.19	-11.9%	0.4	31.7
<i>Memo: total CO₂ from fuel combustion</i>	<i>15.72</i>	<i>292.0%</i>	<i>31.7</i>	<i>31.7</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Argentina

Figure 1. CO₂ emissions by fuel

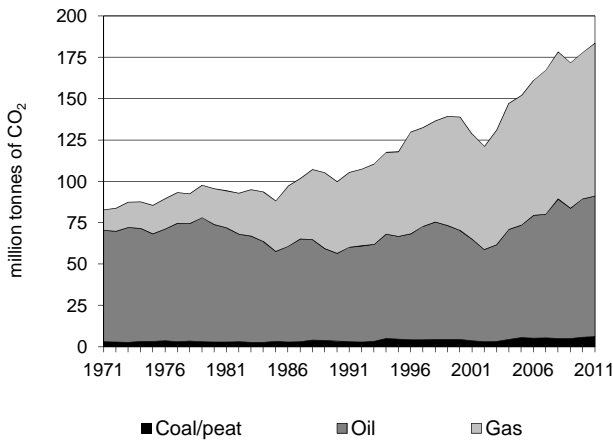


Figure 2. CO₂ emissions by sector

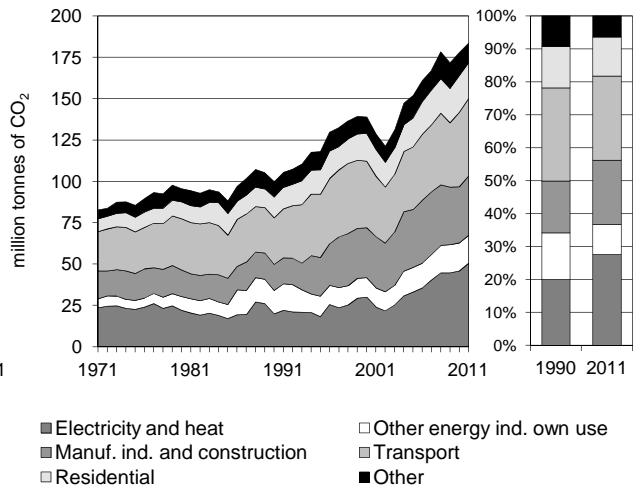


Figure 3. Reference vs Sectoral Approach

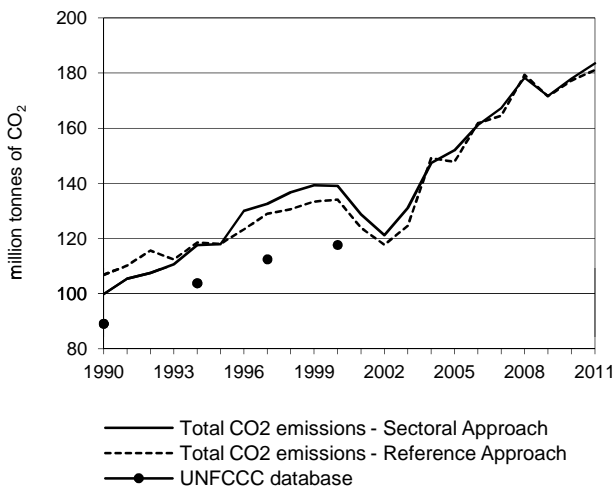


Figure 4. Electricity generation by fuel

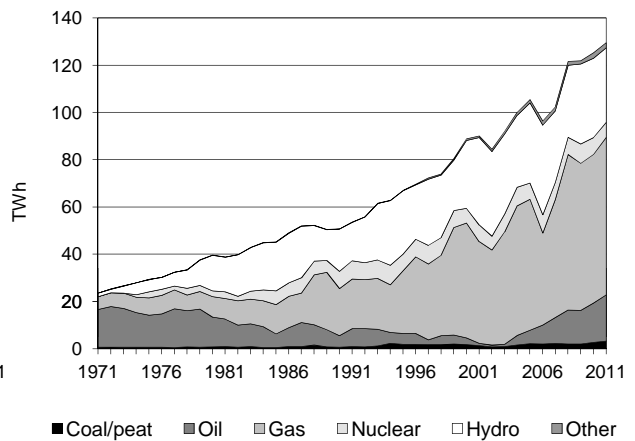


Figure 5. Changes in selected indicators *

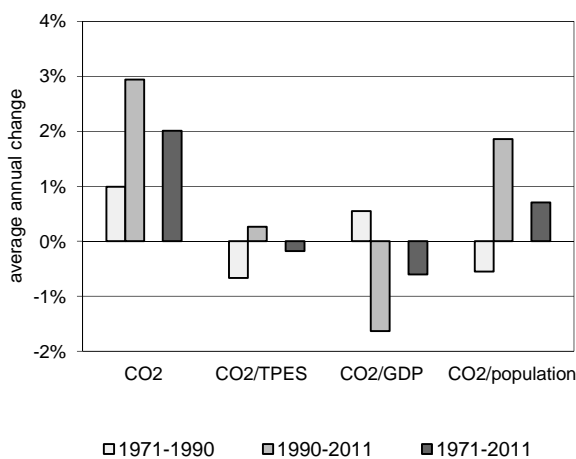
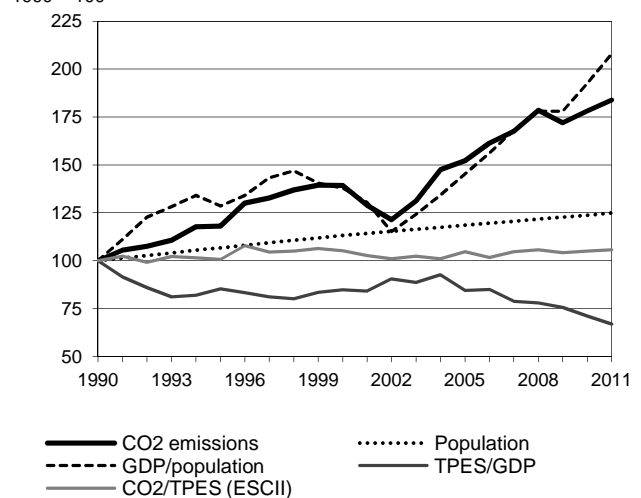


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Argentina

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	99.86	117.97	139.03	151.88	171.73	177.92	183.56	83.8%
TPES (PJ)	1 929	2 262	2 552	2 804	3 185	3 272	3 354	73.9%
GDP (billion 2005 USD)	106.43	146.18	166.01	183.19	232.45	253.74	276.25	159.6%
GDP PPP (billion 2005 USD)	243.46	334.38	379.74	419.05	531.72	580.43	631.91	159.6%
Population (millions)	32.64	34.86	36.93	38.68	40.06	40.41	40.77	24.9%
CO ₂ / TPES (tCO ₂ per TJ)	51.8	52.1	54.5	54.2	53.9	54.4	54.7	5.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.94	0.81	0.84	0.83	0.74	0.70	0.66	-29.2%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.41	0.35	0.37	0.36	0.32	0.31	0.29	-29.2%
CO ₂ / population (tCO ₂ per capita)	3.06	3.38	3.76	3.93	4.29	4.40	4.50	47.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	118	139	152	172	178	184	83.8%
Population	100	107	113	119	123	124	125	24.9%
GDP per population (GDP per capita)	100	129	138	145	178	193	208	107.8%
Energy intensity (TPES/GDP)	100	85	85	84	76	71	67	-33.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	101	105	105	104	105	106	5.7%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	6.29	84.94	92.33	-	183.56	83.8%
Main activity producer elec. and heat	2.29	13.81	25.53	-	41.63	171.8%
Unallocated autoproducers	1.65	0.44	6.83	-	8.92	90.1%
Other energy industry own use	-	3.14	13.63	-	16.77	19.1%
Manufacturing industries and construction	2.35	14.69	18.85	-	35.89	127.6%
Transport	-	40.54	6.32	-	46.86	66.4%
<i>of which: road</i>	-	37.86	5.40	-	43.26	65.8%
Other	-	12.33	21.17	-	33.49	53.3%
<i>of which: residential</i>	-	3.08	18.68	-	21.76	73.9%
Reference Approach	4.59	83.31	93.21	-	181.12	69.6%
Diff. due to losses and/or transformation	- 2.18	- 0.66	0.44	-	- 2.39	
Statistical differences	0.48	- 0.97	0.44	-	- 0.05	
<i>Memo: international marine bunkers</i>	-	4.32	-	-	4.32	94.4%
<i>Memo: international aviation bunkers</i>	-	1.96	-	-	1.96	x

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	37.86	47.5%	11.7	11.7
Main activity prod. elec. and heat - gas	25.53	145.3%	7.9	19.5
Manufacturing industries - gas	18.85	89.6%	5.8	25.3
Residential - gas	18.68	121.6%	5.8	31.1
Manufacturing industries - oil	14.69	201.4%	4.5	35.6
Main activity prod. elec. and heat - oil	13.81	203.3%	4.3	39.9
Other energy industry own use - gas	13.63	53.3%	4.2	44.1
Non-specified other - oil	9.25	57.3%	2.8	46.9
Unallocated autoproducers - gas	6.83	278.9%	2.1	49.0
<i>Memo: total CO₂ from fuel combustion</i>	<i>183.56</i>	<i>83.8%</i>	<i>56.5</i>	<i>56.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Armenia

Figure 1. CO₂ emissions by fuel

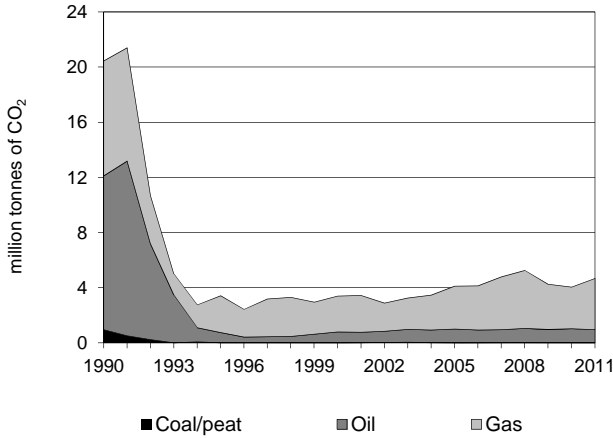


Figure 2. CO₂ emissions by sector

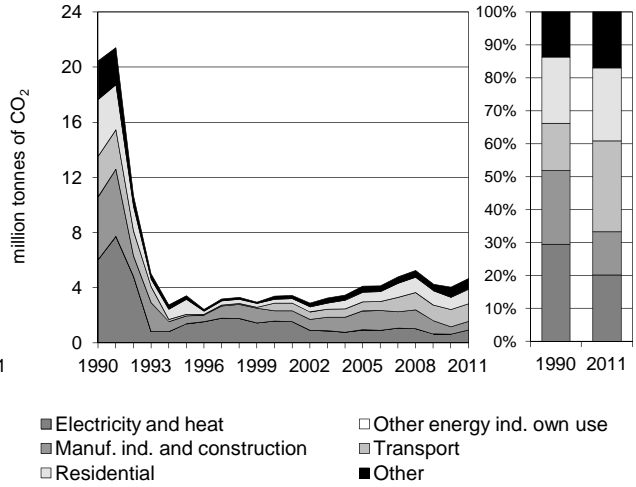


Figure 3. Reference vs Sectoral Approach

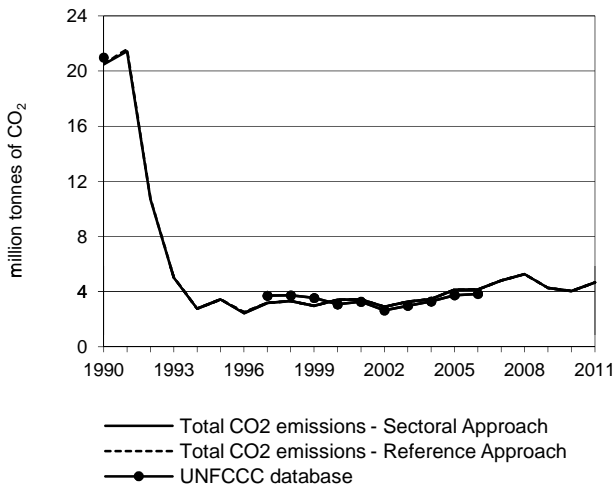


Figure 4. Electricity generation by fuel

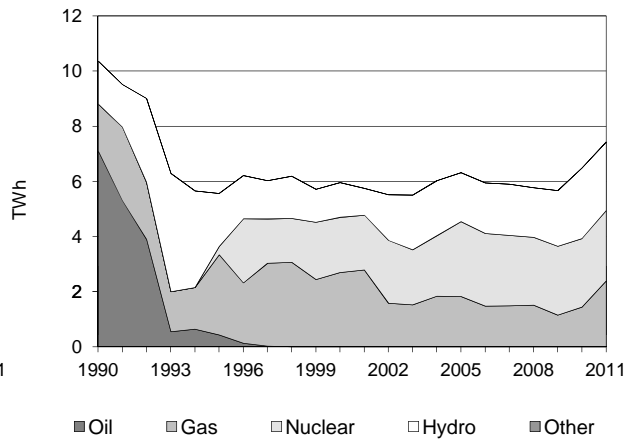


Figure 5. Changes in selected indicators *

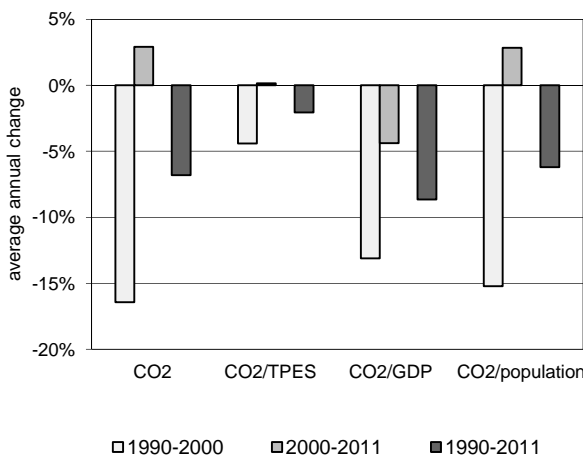
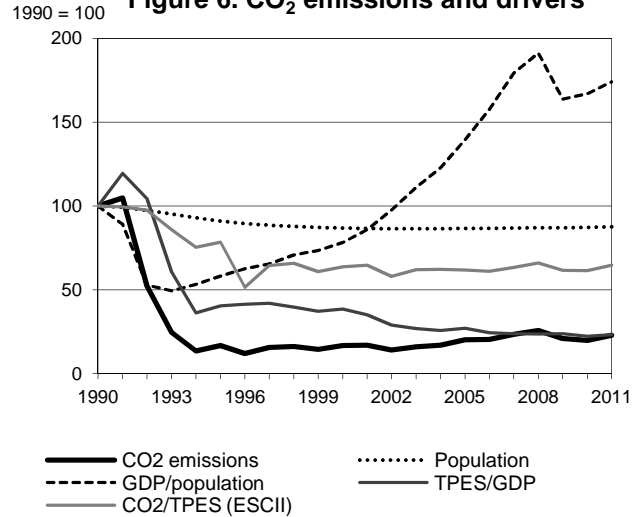


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Armenia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	20.46	3.42	3.40	4.12	4.26	4.04	4.66	-77.2%
TPES (PJ)	323	69	84	105	109	104	114	-64.8%
GDP (billion 2005 USD)	4.06	2.15	2.76	4.90	5.79	5.91	6.18	52.2%
GDP PPP (billion 2005 USD)	10.41	5.50	7.06	12.56	14.84	15.15	15.85	52.2%
Population (millions)	3.55	3.22	3.08	3.07	3.09	3.09	3.10	-12.6%
CO ₂ / TPES (tCO ₂ per TJ)	63.4	49.6	40.4	39.2	39.0	38.9	41.0	-35.3%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	5.04	1.59	1.24	0.84	0.74	0.68	0.75	-85.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.96	0.62	0.48	0.33	0.29	0.27	0.29	-85.0%
CO ₂ / population (tCO ₂ per capita)	5.77	1.06	1.11	1.34	1.38	1.31	1.50	-73.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	17	17	20	21	20	23	-77.2%
Population	100	91	87	86	87	87	87	-12.6%
GDP per population (GDP per capita)	100	58	78	139	164	167	174	74.0%
Energy intensity (TPES/GDP)	100	40	39	27	24	22	23	-76.8%
Carbon intensity: ESCII (CO ₂ /TPES)	100	78	64	62	61	61	65	-35.3%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	0.96	3.70	-	4.66	-77.2%
Main activity producer elec. and heat	-	-	0.94	-	0.94	-84.4%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	-	0.02	0.59	-	0.61	-86.6%
Transport	-	0.50	0.79	-	1.29	-56.2%
<i>of which: road</i>	-	0.50	0.79	-	1.29	-56.2%
Other	-	0.45	1.38	-	1.83	-73.6%
<i>of which: residential</i>	-	-	1.03	-	1.03	-74.9%
Reference Approach	-	0.96	3.70	-	4.66	-77.3%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	-	-	-	-	-
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	0.13	-	-	0.13	-77.3%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Residential - gas	1.03	-60.9%	10.3	10.3
Main activity prod. elec. and heat - gas	0.94	-51.0%	9.4	19.6
Road - gas	0.79	x	7.9	27.5
Manufacturing industries - gas	0.59	-73.8%	5.9	33.4
Road - oil	0.50	-83.1%	4.9	38.3
Non-specified other - oil	0.45	-65.2%	4.5	42.8
Non-specified other - gas	0.35	-77.1%	3.4	46.2
Manufacturing industries - oil	0.02	-99.3%	0.2	46.4
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>4.66</i>	<i>-77.2%</i>	<i>46.4</i>	<i>46.4</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Australia

Figure 1. CO₂ emissions by fuel

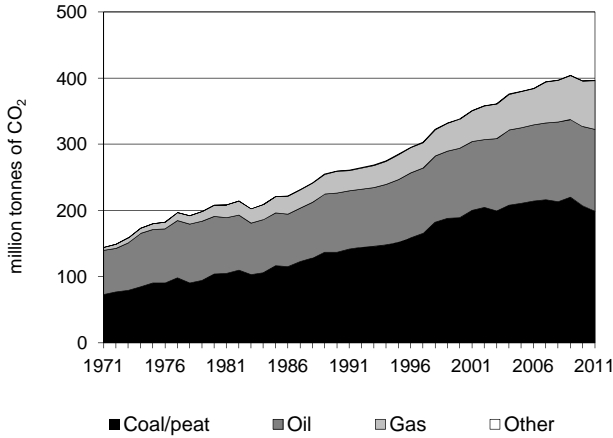


Figure 2. CO₂ emissions by sector

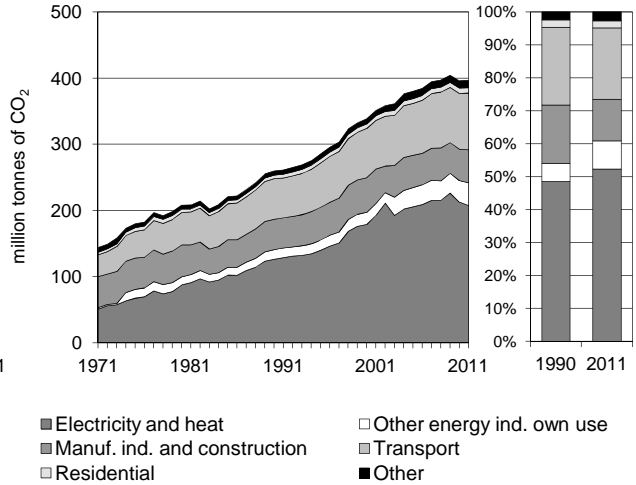


Figure 3. Reference vs Sectoral Approach

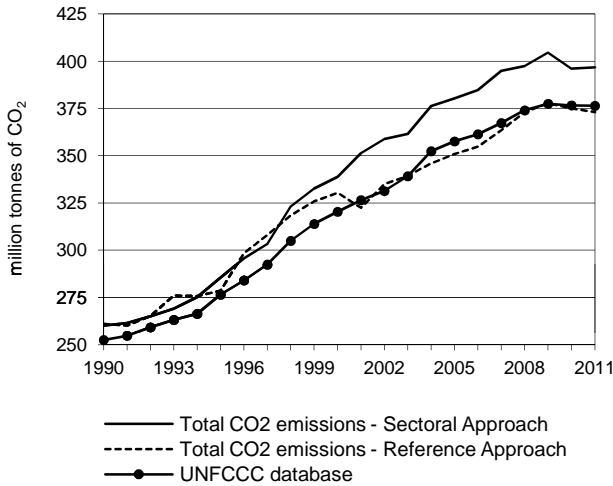


Figure 4. Electricity generation by fuel

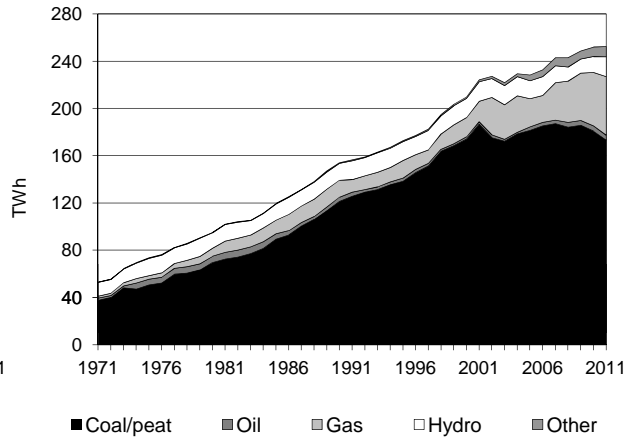


Figure 5. Changes in selected indicators *

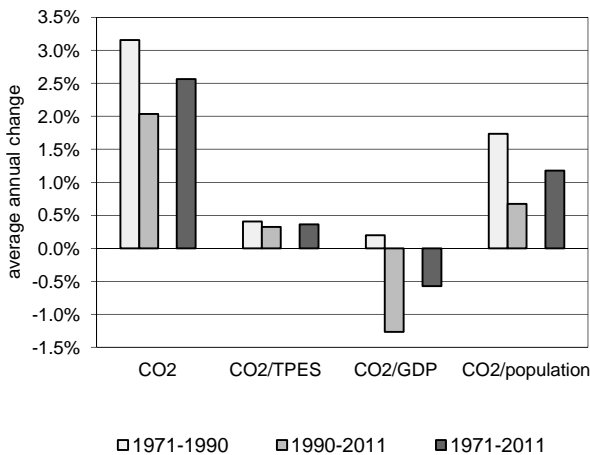
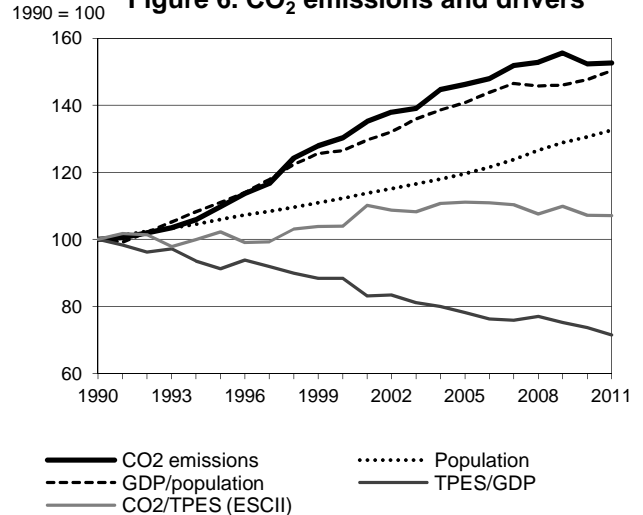


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Australia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	260.02	285.43	338.77	380.23	404.59	396.03	396.77	52.6%
TPES (PJ)	3 610	3 875	4 526	4 752	5 112	5 129	5 145	42.5%
GDP (billion 2005 USD)	451.06	530.74	640.15	759.83	849.18	869.84	899.11	99.3%
GDP PPP (billion 2005 USD)	425.43	500.59	603.77	716.65	800.93	820.42	848.02	99.3%
Population (millions)	17.17	18.19	19.27	20.54	22.13	22.43	22.76	32.6%
CO ₂ / TPES (tCO ₂ per TJ)	72.0	73.7	74.8	80.0	79.1	77.2	77.1	7.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.58	0.54	0.53	0.50	0.48	0.46	0.44	-23.5%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.61	0.57	0.56	0.53	0.51	0.48	0.47	-23.4%
CO ₂ / population (tCO ₂ per capita)	15.14	15.69	17.58	18.51	18.28	17.66	17.43	15.1%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	110	130	146	156	152	153	52.6%
Population	100	106	112	120	129	131	133	32.6%
GDP per population (GDP per capita)	100	111	126	141	146	148	150	50.4%
Energy intensity (TPES/GDP)	100	91	88	78	75	74	71	-28.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	102	104	111	110	107	107	7.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	198.82	123.73	73.76	0.46	396.77	52.6%
Main activity producer elec. and heat	179.32	0.37	19.44	-	199.13	64.4%
Unallocated autoproducers	0.73	2.17	5.78	-	8.67	67.1%
Other energy industry own use	3.99	11.22	18.68	-	33.90	135.7%
Manufacturing industries and construction	14.19	16.40	18.86	0.46	49.91	8.5%
Transport	0.48	84.46	1.08	-	86.02	40.1%
<i>of which: road</i>	-	71.82	0.12	-	71.95	32.0%
Other	0.12	9.11	9.91	-	19.14	59.8%
<i>of which: residential</i>	0.01	0.78	7.44	-	8.22	46.1%
Reference Approach	192.08	117.83	62.61	0.46	372.97	42.9%
Diff. due to losses and/or transformation	1.60	0.28	0.74	-	2.62	
Statistical differences	- 8.35	- 6.17	- 11.89	-	- 26.41	
<i>Memo: international marine bunkers</i>	-	1.99	-	-	1.99	-6.7%
<i>Memo: international aviation bunkers</i>	-	10.17	-	-	10.17	136.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	179.32	59.2%	31.3	31.3
Road - oil	71.82	31.8%	12.5	43.9
Main activity prod. elec. and heat - gas	19.44	174.8%	3.4	47.3
Manufacturing industries - gas	18.86	37.5%	3.3	50.5
Other energy industry own use - gas	18.68	287.6%	3.3	53.8
Manufacturing industries - oil	16.40	27.3%	2.9	56.7
Manufacturing industries - coal/peat	14.19	-23.4%	2.5	59.1
Other transport - oil	12.64	92.0%	2.2	61.4
Other energy industry own use - oil	11.22	55.8%	2.0	63.3
<i>Memo: total CO₂ from fuel combustion</i>	<i>396.77</i>	<i>52.6%</i>	<i>69.3</i>	<i>69.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Austria

Figure 1. CO₂ emissions by fuel

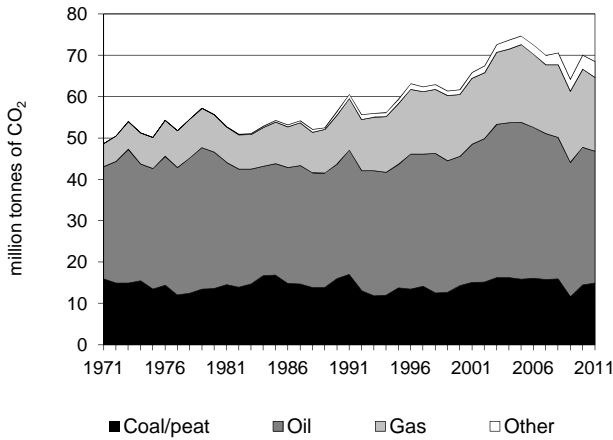


Figure 2. CO₂ emissions by sector

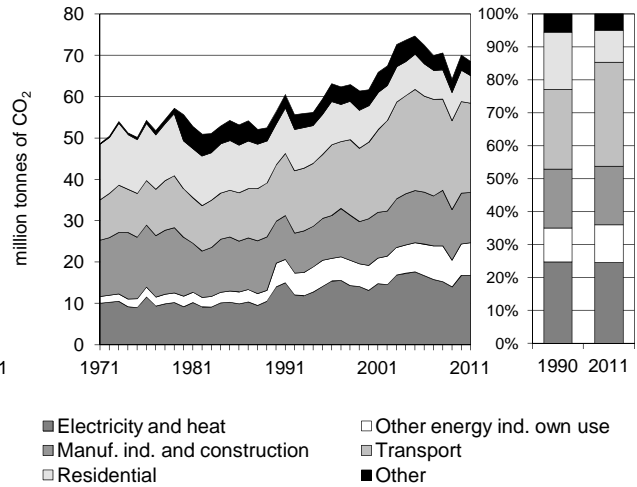


Figure 3. Reference vs Sectoral Approach

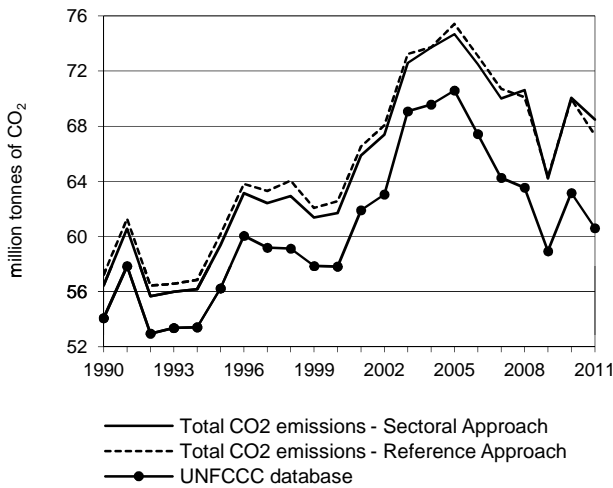


Figure 4. Electricity generation by fuel

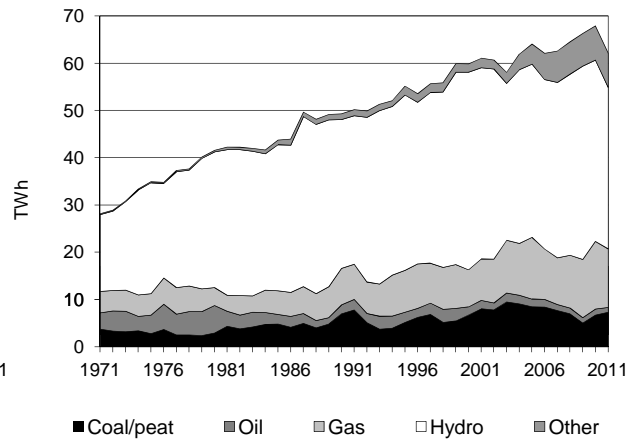


Figure 5. Changes in selected indicators *

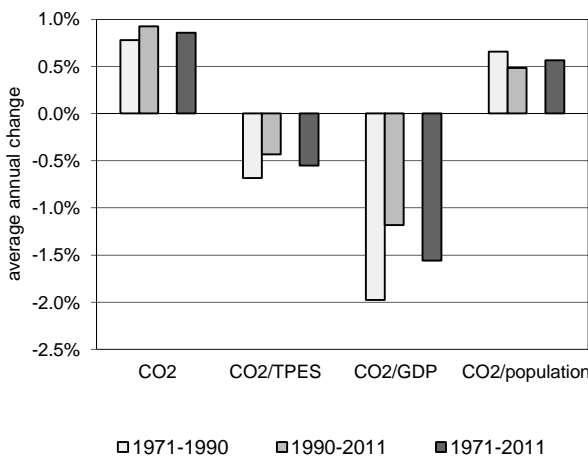
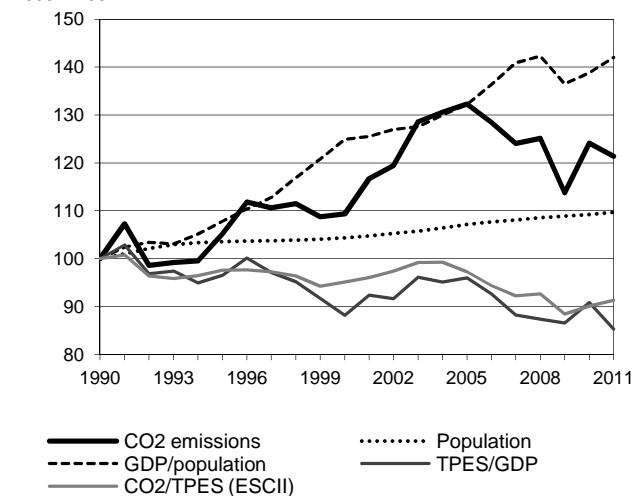


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Austria

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	56.44	59.38	61.70	74.67	64.21	70.06	68.49	21.4%
TPES (PJ)	1 040	1 121	1 196	1 415	1 338	1 433	1 382	32.9%
GDP (billion 2005 USD)	215.29	240.29	280.62	304.98	320.02	326.59	335.39	55.8%
GDP PPP (billion 2005 USD)	195.31	217.99	254.57	276.67	290.31	296.27	304.26	55.8%
Population (millions)	7.68	7.95	8.01	8.23	8.36	8.39	8.42	9.7%
CO ₂ / TPES (tCO ₂ per TJ)	54.3	53.0	51.6	52.8	48.0	48.9	49.5	-8.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.26	0.25	0.22	0.24	0.20	0.21	0.20	-22.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.29	0.27	0.24	0.27	0.22	0.24	0.23	-22.1%
CO ₂ / population (tCO ₂ per capita)	7.35	7.47	7.70	9.08	7.68	8.35	8.13	10.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	105	109	132	114	124	121	21.4%
Population	100	104	104	107	109	109	110	9.7%
GDP per population (GDP per capita)	100	108	125	132	136	139	142	42.0%
Energy intensity (TPES/GDP)	100	97	88	96	87	91	85	-14.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	98	95	97	88	90	91	-8.7%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	14.98	31.85	17.86	3.81	68.49	21.4%
Main activity producer elec. and heat	4.25	0.42	4.86	0.99	10.52	0.7%
Unallocated autoproducers	3.75	0.63	1.26	0.65	6.28	77.6%
Other energy industry own use	4.83	2.10	0.96	-	7.89	36.2%
Manufacturing industries and construction	1.92	2.41	5.66	2.16	12.16	20.6%
Transport	-	21.22	0.40	-	21.62	58.5%
<i>of which: road</i>	-	20.88	0.01	-	20.89	60.0%
Other	0.22	5.08	4.72	0.00	10.02	-22.5%
<i>of which: residential</i>	0.20	3.64	2.78	-	6.62	-32.7%
Reference Approach	13.94	31.74	17.86	3.81	67.35	17.7%
Diff. due to losses and/or transformation	- 1.02	- 0.10	-	-	- 1.12	
Statistical differences	- 0.02	- 0.00	0.01	- 0.00	- 0.01	
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	2.06	-	-	2.06	140.6%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	20.88	59.9%	23.0	23.0
Manufacturing industries - gas	5.66	29.6%	6.2	29.3
Main activity prod. elec. and heat - gas	4.86	47.9%	5.4	34.6
Other energy industry - coal/peat	4.83	60.2%	5.3	39.9
Main activity prod. elec. and heat - coal/peat	4.25	-27.2%	4.7	44.6
Unallocated autoproducers - coal/peat	3.75	155.6%	4.1	48.8
Residential - oil	3.64	-31.2%	4.0	52.8
Residential - gas	2.78	55.8%	3.1	55.8
Manufacturing industries - oil	2.41	-6.9%	2.7	58.5
<i>Memo: total CO₂ from fuel combustion</i>	<i>68.49</i>	<i>21.4%</i>	<i>75.5</i>	<i>75.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Azerbaijan

Figure 1. CO₂ emissions by fuel

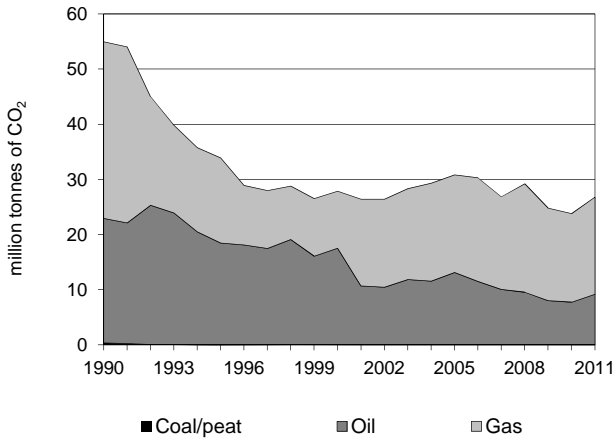


Figure 2. CO₂ emissions by sector

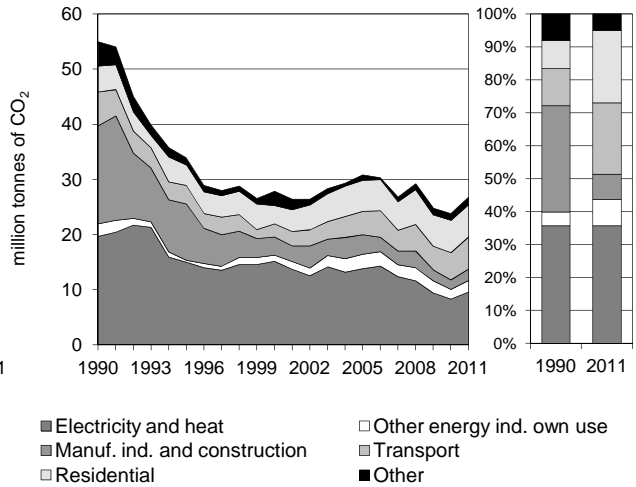


Figure 3. Reference vs Sectoral Approach

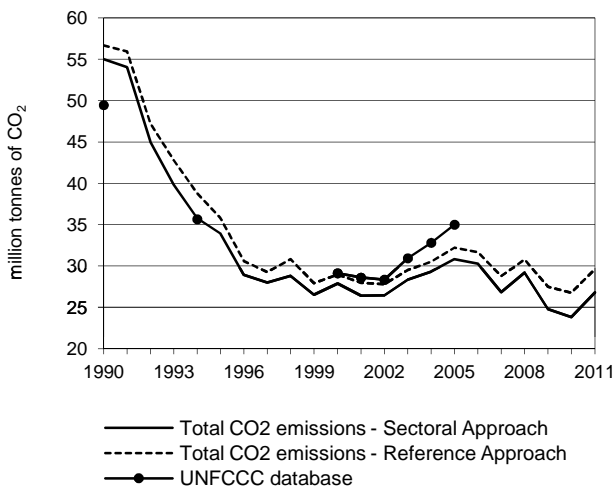


Figure 4. Electricity generation by fuel

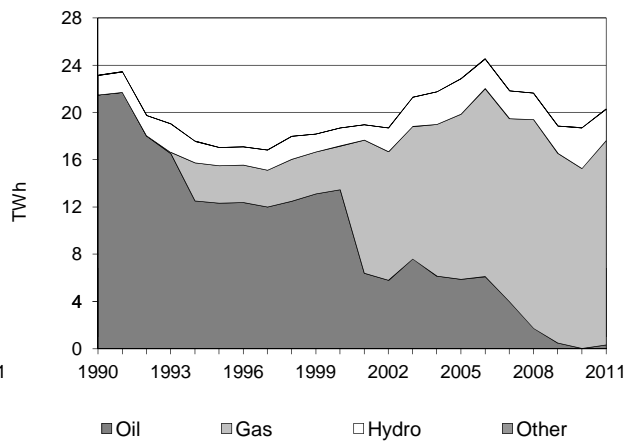


Figure 5. Changes in selected indicators *

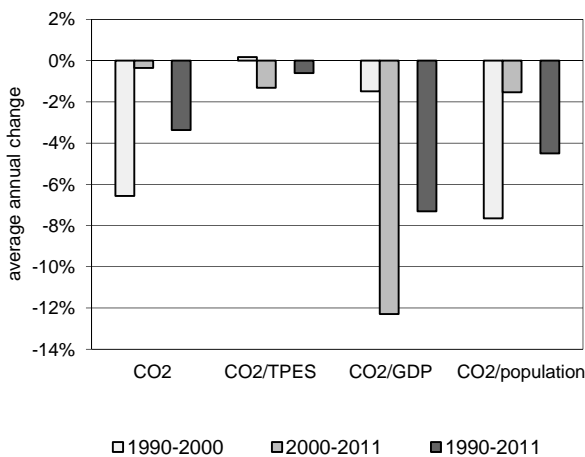
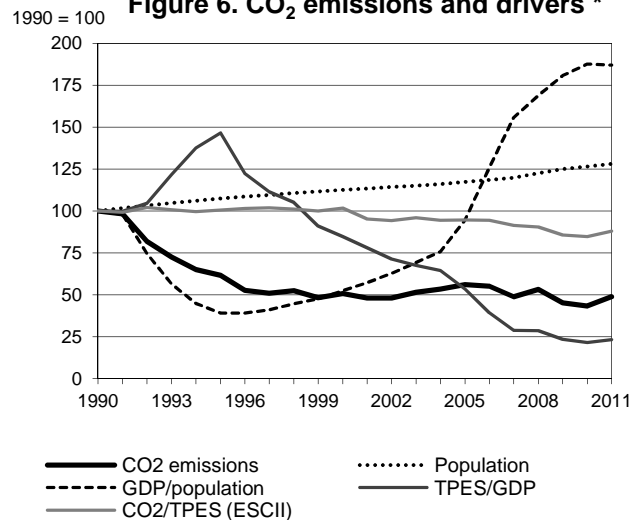


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Azerbaijan

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	55.01	33.90	27.88	30.81	24.80	23.82	26.79	-51.3%
TPES (PJ)	949	582	473	562	500	485	526	-44.6%
GDP (billion 2005 USD)	11.95	5.00	7.04	13.25	26.98	28.33	28.61	139.5%
GDP PPP (billion 2005 USD)	34.03	14.25	20.04	37.73	76.85	80.70	81.50	139.5%
Population (millions)	7.16	7.69	8.05	8.39	8.95	9.05	9.17	28.1%
CO ₂ / TPES (tCO ₂ per TJ)	58.0	58.2	59.0	54.8	49.6	49.1	50.9	-12.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	4.60	6.78	3.96	2.33	0.92	0.84	0.94	-79.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.62	2.38	1.39	0.82	0.32	0.30	0.33	-79.7%
CO ₂ / population (tCO ₂ per capita)	7.68	4.41	3.46	3.67	2.77	2.63	2.92	-62.0%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	62	51	56	45	43	49	-51.3%
Population	100	107	112	117	125	126	128	28.1%
GDP per population (GDP per capita)	100	39	52	95	181	187	187	87.0%
Energy intensity (TPES/GDP)	100	147	85	53	23	22	23	-76.9%
Carbon intensity: ESCII (CO ₂ /TPES)	100	100	102	95	86	85	88	-12.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	9.19	17.60	-	26.79	-51.3%
Main activity producer elec. and heat	-	0.26	9.16	-	9.42	-52.1%
Unallocated autoproducers	-	0.01	0.15	-	0.15	x
Other energy industry own use	-	1.33	0.80	-	2.13	-5.5%
Manufacturing industries and construction	-	0.57	1.49	-	2.07	-88.4%
Transport	-	5.80	-	-	5.80	-6.2%
<i>of which: road</i>	-	5.31	-	-	5.31	2.2%
Other	-	1.23	6.00	-	7.23	-20.9%
<i>of which: residential</i>	-	0.17	5.70	-	5.87	25.3%
Reference Approach	-	10.20	19.40	-	29.60	-47.8%
Diff. due to losses and/or transformation	-	0.38	1.75	-	2.13	
Statistical differences	-	0.63	0.05	-	0.68	
<i>Memo: international marine bunkers</i>	-	0.24	-	-	0.24	..
<i>Memo: international aviation bunkers</i>	-	1.29	-	-	1.29	25.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - gas	9.16	-11.6%	18.5	18.5
Residential - gas	5.70	24.6%	11.5	30.0
Road - oil	5.31	4.6%	10.7	40.6
Manufacturing industries - gas	1.49	-89.8%	3.0	43.7
Other energy industry own use - oil	1.33	-41.1%	2.7	46.3
Non-specified other - oil	1.06	-47.9%	2.1	48.5
Other energy industry own use - gas	0.80	x	1.6	50.1
Manufacturing industries - oil	0.57	-81.7%	1.2	51.2
Other transport - oil	0.49	-29.8%	1.0	52.2
<i>Memo: total CO₂ from fuel combustion</i>	<i>26.79</i>	<i>-51.3%</i>	<i>54.0</i>	<i>54.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Bahrain

Figure 1. CO₂ emissions by fuel

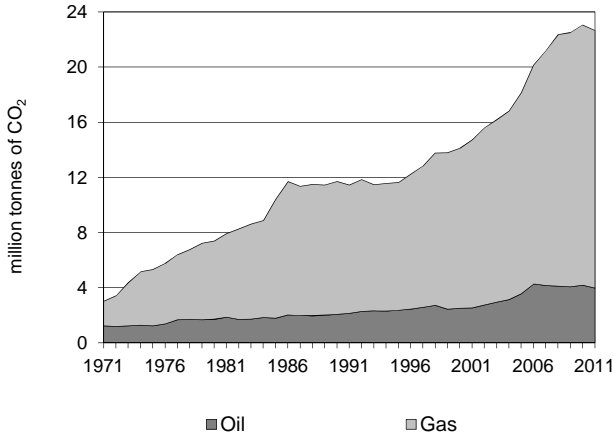


Figure 2. CO₂ emissions by sector

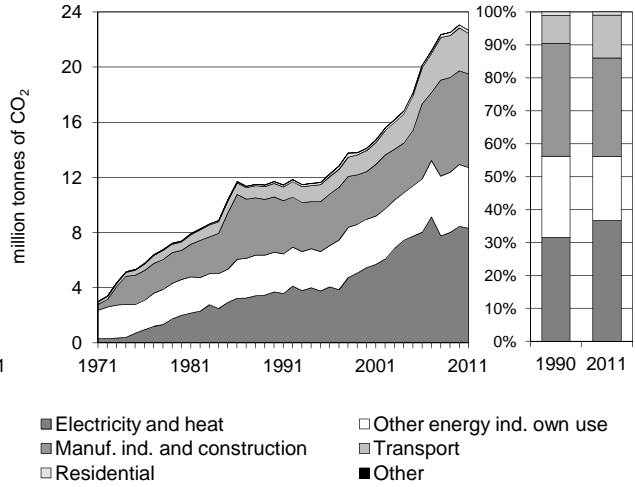


Figure 3. Reference vs Sectoral Approach

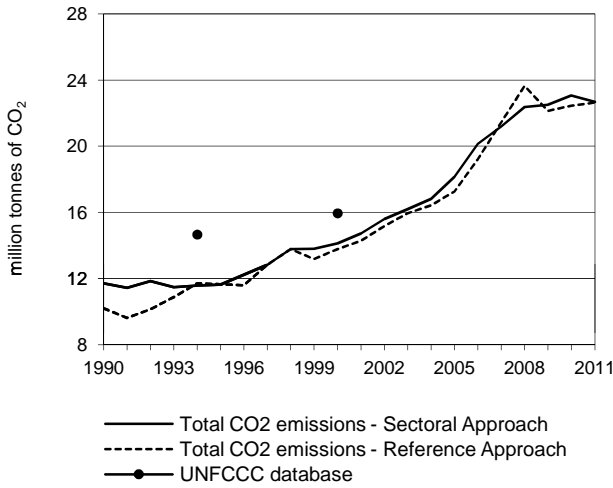


Figure 4. Electricity generation by fuel

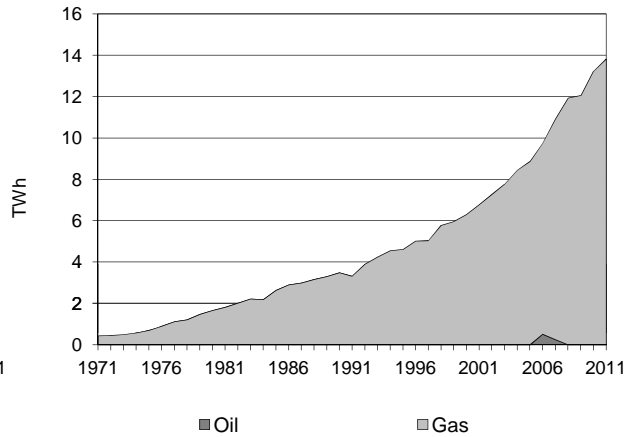


Figure 5. Changes in selected indicators *

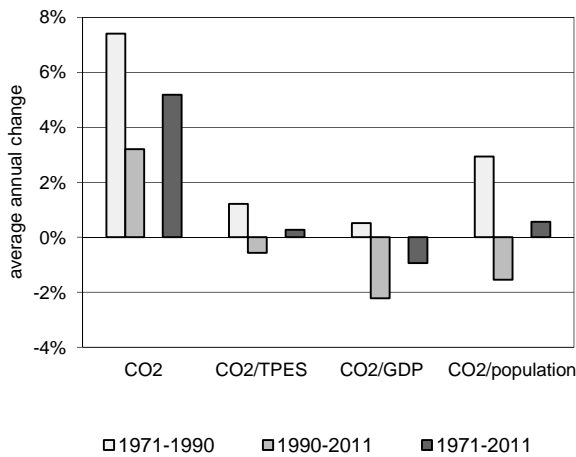
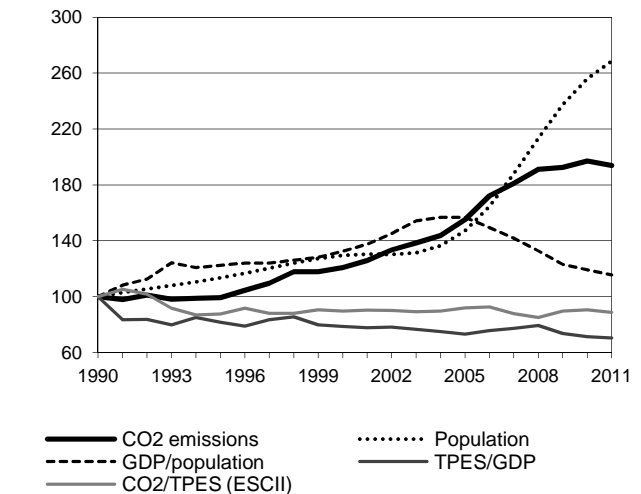


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Bahrain

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	11.70	11.63	14.13	18.15	22.52	23.07	22.68	93.8%
TPES (PJ)	182	206	246	307	391	397	398	118.5%
GDP (billion 2005 USD)	5.84	8.11	10.02	13.46	17.03	17.82	18.14	210.5%
GDP PPP (billion 2005 USD)	8.83	12.26	15.14	20.34	25.77	26.93	27.41	210.5%
Population (millions)	0.49	0.56	0.64	0.73	1.17	1.26	1.32	168.6%
CO ₂ / TPES (tCO ₂ per TJ)	64.2	56.3	57.5	59.1	57.6	58.2	57.0	-11.3%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	2.00	1.43	1.41	1.35	1.32	1.30	1.25	-37.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.33	0.95	0.93	0.89	0.87	0.86	0.83	-37.6%
CO ₂ / population (tCO ₂ per capita)	23.73	20.80	22.14	25.03	19.24	18.28	17.13	-27.8%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	99	121	155	192	197	194	93.8%
Population	100	113	129	147	237	256	269	168.6%
GDP per population (GDP per capita)	100	122	133	157	123	119	116	15.6%
Energy intensity (TPES/GDP)	100	82	79	73	74	71	70	-29.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	88	90	92	90	91	89	-11.3%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	3.98	18.69	-	22.68	93.8%
Main activity producer elec. and heat	-	-	8.31	-	8.31	125.0%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	0.82	3.60	-	4.42	53.1%
Manufacturing industries and construction	-	-	6.78	-	6.78	69.3%
Transport	-	2.93	-	-	2.93	196.2%
<i>of which: road</i>	-	2.86	-	-	2.86	188.9%
Other	-	0.23	-	-	0.23	83.5%
<i>of which: residential</i>	-	0.23	-	-	0.23	83.5%
Reference Approach	-	3.95	18.69	-	22.64	122.0%
Diff. due to losses and/or transformation	-	-0.04	-	-	-0.04	
Statistical differences	-	-0.00	0.00	-	-0.00	
<i>Memo: international marine bunkers</i>	-	0.24	-	-	0.24	-3.8%
<i>Memo: international aviation bunkers</i>	-	1.83	-	-	1.83	28.3%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - gas	8.31	125.0%	31.2	31.2
Manufacturing industries - gas	6.78	69.3%	25.4	56.6
Other energy industry own use - gas	3.60	87.3%	13.5	70.1
Road - oil	2.86	188.9%	10.7	80.8
Other energy industry own use - oil	0.82	-14.8%	3.1	83.9
Residential - oil	0.23	83.5%	0.9	84.8
Other transport - oil	0.07	x	0.3	85.0
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>22.68</i>	<i>93.8%</i>	<i>85.0</i>	<i>85.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Bangladesh

Figure 1. CO₂ emissions by fuel

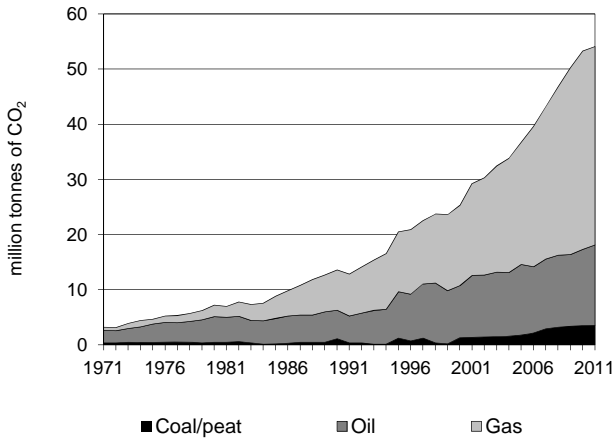


Figure 2. CO₂ emissions by sector

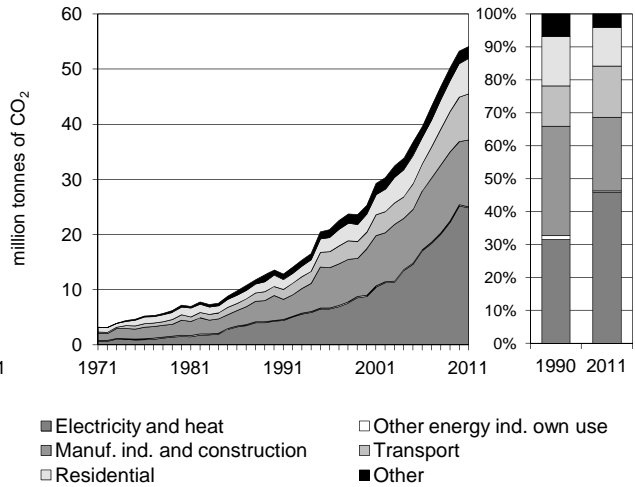


Figure 3. Reference vs Sectoral Approach

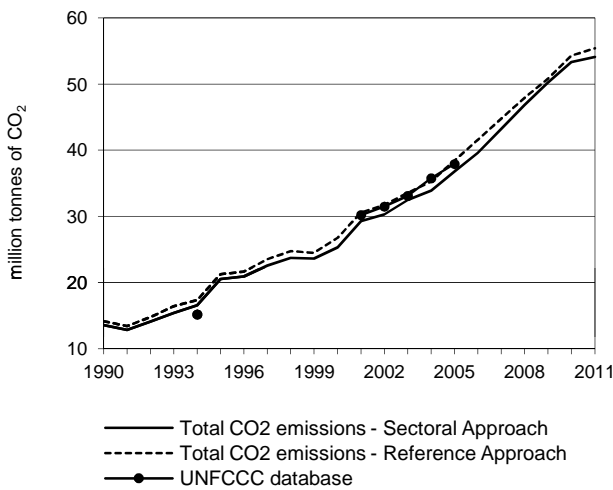


Figure 4. Electricity generation by fuel

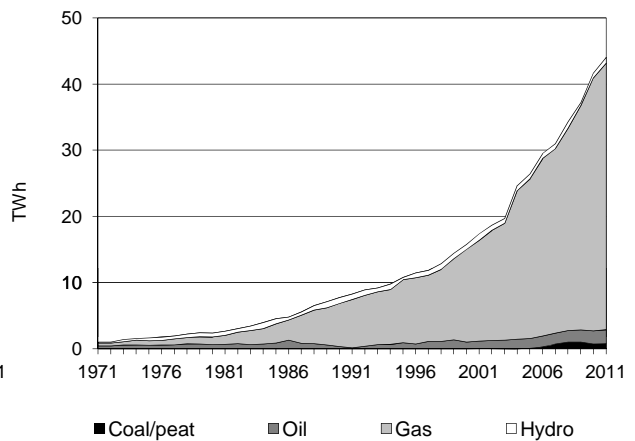


Figure 5. Changes in selected indicators *

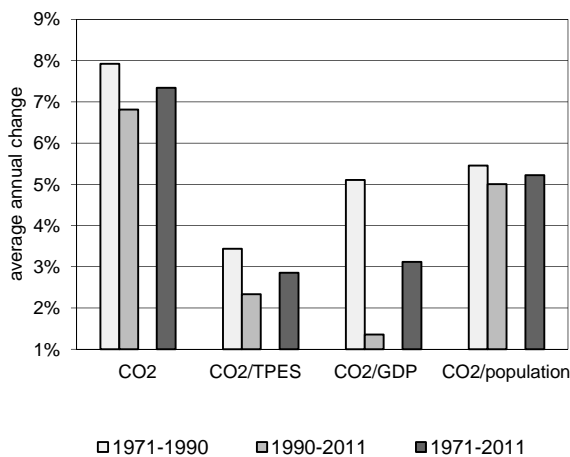
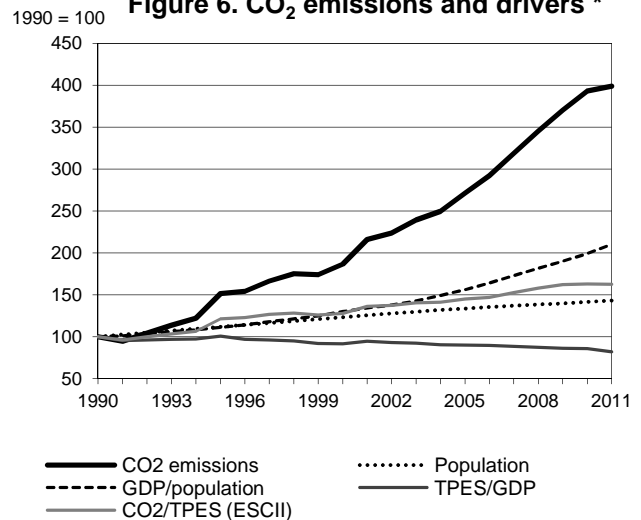


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Bangladesh

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	13.57	20.51	25.30	36.80	50.23	53.32	54.12	298.9%
TPES (PJ)	533	666	778	999	1 220	1 288	1 310	145.7%
GDP (billion 2005 USD)	28.95	35.89	46.27	60.28	76.81	81.47	86.94	200.3%
GDP PPP (billion 2005 USD)	78.65	97.50	125.68	163.73	208.63	221.30	236.14	200.3%
Population (millions)	105.26	117.49	129.59	140.59	147.03	148.69	150.49	43.0%
CO ₂ / TPES (tCO ₂ per TJ)	25.4	30.8	32.5	36.8	41.2	41.4	41.3	62.3%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.47	0.57	0.55	0.61	0.65	0.65	0.62	32.8%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.17	0.21	0.20	0.22	0.24	0.24	0.23	32.9%
CO ₂ / population (tCO ₂ per capita)	0.13	0.17	0.20	0.26	0.34	0.36	0.36	179.0%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	151	187	271	370	393	399	298.9%
Population	100	112	123	134	140	141	143	43.0%
GDP per population (GDP per capita)	100	111	130	156	190	199	210	110.0%
Energy intensity (TPES/GDP)	100	101	91	90	86	86	82	-18.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	121	128	145	162	163	162	62.3%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	3.54	14.56	36.02	-	54.12	298.9%
Main activity producer elec. and heat	0.83	2.35	15.00	-	18.17	324.0%
Unallocated autoproducers	-	-	6.65	-	6.65	x
Other energy industry own use	-	0.22	-	-	0.22	47.0%
Manufacturing industries and construction	2.71	2.42	6.96	-	12.09	168.0%
Transport	-	6.30	2.11	-	8.40	409.1%
<i>of which: road</i>	-	4.56	2.11	-	6.67	460.2%
Other	-	3.28	5.30	-	8.57	188.9%
<i>of which: residential</i>	-	1.60	4.79	-	6.39	214.0%
Reference Approach	3.54	14.77	37.09	-	55.40	291.8%
Diff. due to losses and/or transformation	-	0.18	1.07	-	1.26	
Statistical differences	- 0.00	0.02	0.00	-	0.02	
<i>Memo: international marine bunkers</i>	-	0.11	-	-	0.11	78.6%
<i>Memo: international aviation bunkers</i>	-	0.95	-	-	0.95	250.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - gas	15.00	282.5%	7.9	7.9
Manufacturing industries - gas	6.96	159.4%	3.6	11.5
Unallocated autoproducers - gas	6.65	x	3.5	15.0
Residential - gas	4.79	805.0%	2.5	17.5
Road - oil	4.56	283.0%	2.4	19.9
Manufacturing industries - coal/peat	2.71	148.1%	1.4	21.3
Manufacturing industries - oil	2.42	228.9%	1.3	22.6
Main activity prod. elec. and heat - oil	2.35	540.9%	1.2	23.8
Road - gas	2.11	x	1.1	24.9
<i>Memo: total CO₂ from fuel combustion</i>	<i>54.12</i>	<i>298.9%</i>	<i>28.3</i>	<i>28.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Belarus

Figure 1. CO₂ emissions by fuel

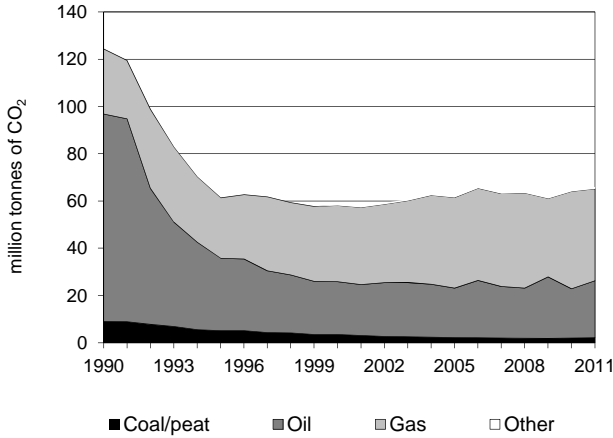


Figure 2. CO₂ emissions by sector

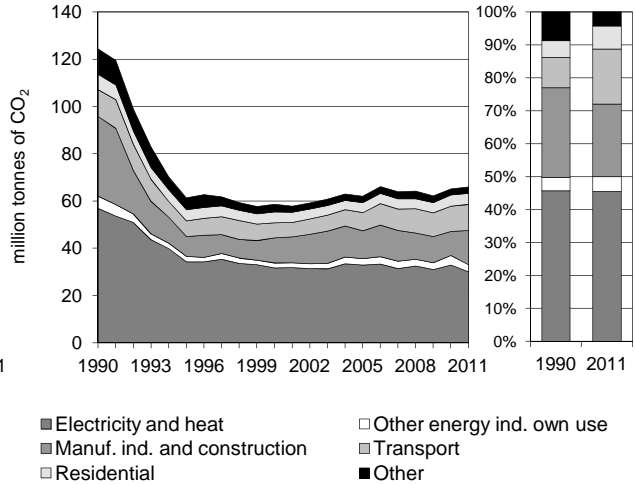


Figure 3. Reference vs Sectoral Approach

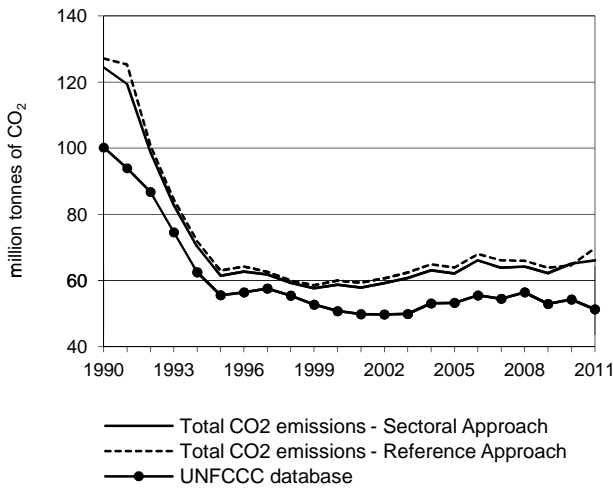


Figure 4. Electricity generation by fuel

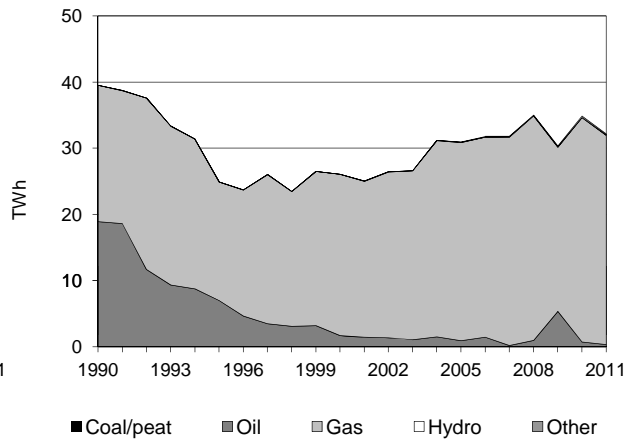


Figure 5. Changes in selected indicators *

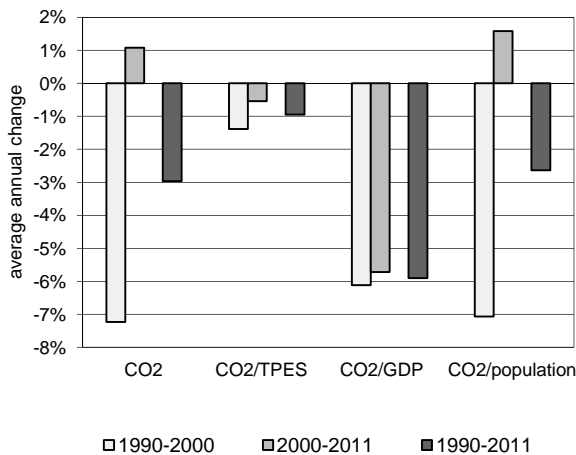
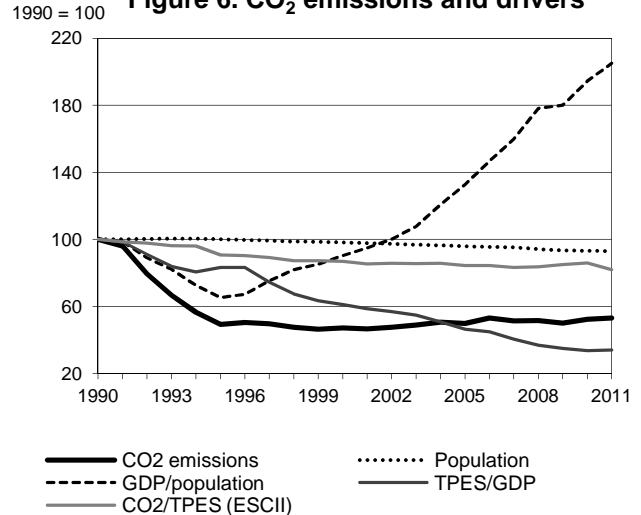


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Belarus

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	124.41	61.42	58.71	62.08	62.19	65.12	66.04	-46.9%
TPES (PJ)	1 905	1 036	1 034	1 125	1 119	1 159	1 235	-35.2%
GDP (billion 2005 USD)	23.72	15.49	21.03	30.21	39.87	42.94	45.22	90.6%
GDP PPP (billion 2005 USD)	65.56	42.80	58.13	83.49	110.19	118.67	124.96	90.6%
Population (millions)	10.19	10.19	10.01	9.78	9.51	9.49	9.47	-7.0%
CO ₂ / TPES (tCO ₂ per TJ)	65.3	59.3	56.8	55.2	55.6	56.2	53.5	-18.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	5.24	3.97	2.79	2.05	1.56	1.52	1.46	-72.2%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.90	1.44	1.01	0.74	0.56	0.55	0.53	-72.2%
CO ₂ / population (tCO ₂ per capita)	12.21	6.03	5.87	6.35	6.54	6.86	6.97	-42.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	49	47	50	50	52	53	-46.9%
Population	100	100	98	96	93	93	93	-7.0%
GDP per population (GDP per capita)	100	65	90	133	180	194	205	105.0%
Energy intensity (TPES/GDP)	100	83	61	46	35	34	34	-66.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	91	87	84	85	86	82	-18.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	2.16	24.14	38.92	0.82	66.04	-46.9%
Main activity producer elec. and heat	0.19	0.28	23.59	-	24.06	-41.9%
Unallocated autoproducers	0.34	0.57	4.93	0.15	5.99	-61.3%
Other energy industry own use	0.06	2.37	0.53	-	2.96	-42.2%
Manufacturing industries and construction	0.47	7.86	5.60	0.67	14.59	-56.9%
Transport	0.04	10.29	0.68	-	11.01	-3.2%
<i>of which: road</i>	-	9.56	0.03	-	9.58	1.9%
Other	1.06	2.78	3.60	-	7.44	-56.8%
<i>of which: residential</i>	0.86	0.50	3.29	-	4.64	-27.4%
Reference Approach	2.60	27.12	39.18	0.82	69.72	-45.2%
Diff. due to losses and/or transformation	0.44	0.98	0.26	-	1.68	
Statistical differences	- 0.00	2.00	- 0.00	-	2.00	
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	-	-	-	-	-

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - gas	23.59	43.7%	23.1	23.1
Road - oil	9.56	3.2%	9.4	32.5
Manufacturing industries - oil	7.86	-72.1%	7.7	40.2
Manufacturing industries - gas	5.60	4.2%	5.5	45.7
Unallocated autoproducers - gas	4.93	124.9%	4.8	50.5
Residential - gas	3.29	90.8%	3.2	53.7
Other energy industry own use - oil	2.37	-50.2%	2.3	56.0
Non-specified other - oil	2.28	-69.2%	2.2	58.3
Residential - coal/peat	0.86	-77.8%	0.8	59.1
<i>Memo: total CO₂ from fuel combustion</i>	<i>66.04</i>	<i>-46.9%</i>	<i>64.7</i>	<i>64.7</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Belgium

Figure 1. CO₂ emissions by fuel

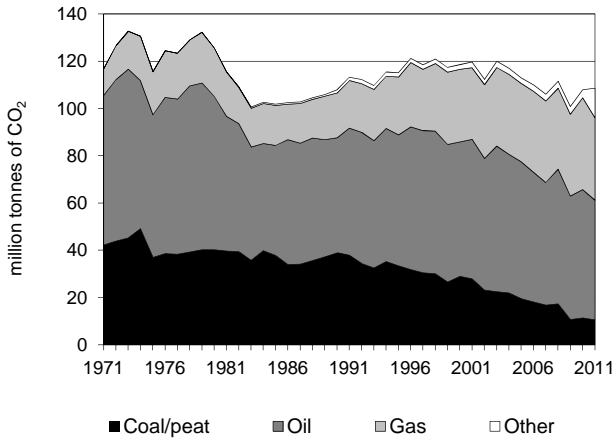


Figure 2. CO₂ emissions by sector

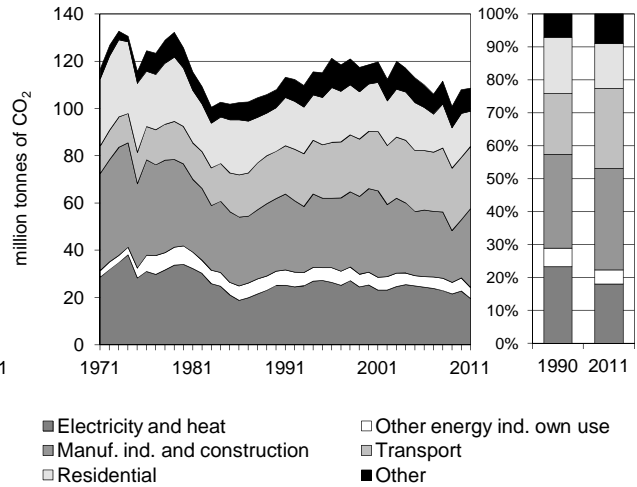


Figure 3. Reference vs Sectoral Approach

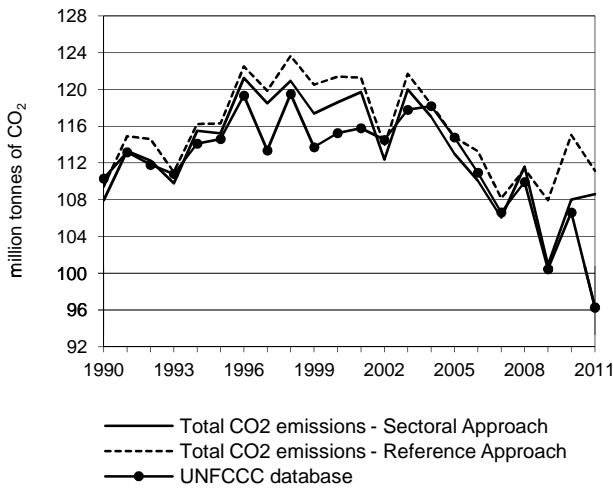


Figure 4. Electricity generation by fuel

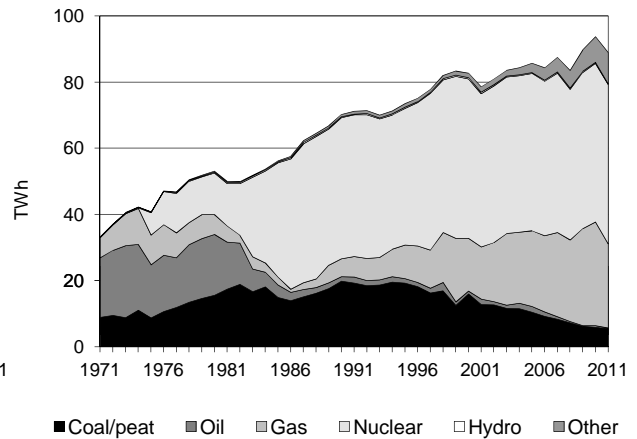


Figure 5. Changes in selected indicators *

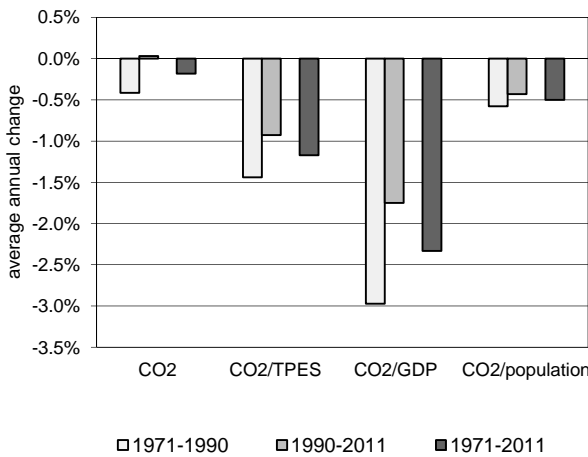
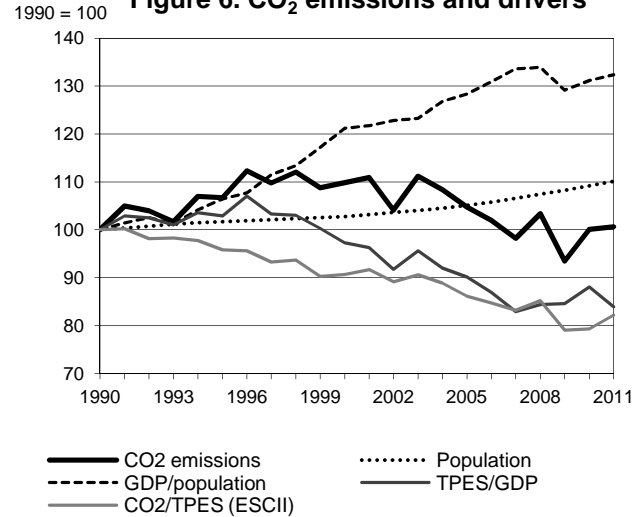


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Belgium

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	107.95	115.21	118.60	113.00	100.89	108.01	108.59	0.6%
TPES (PJ)	2 022	2 251	2 450	2 457	2 391	2 549	2 474	22.4%
GDP (billion 2005 USD)	279.85	302.86	348.63	377.35	391.33	400.81	407.96	45.8%
GDP PPP (billion 2005 USD)	250.15	270.71	311.63	337.30	349.80	358.27	364.66	45.8%
Population (millions)	9.97	10.14	10.25	10.47	10.79	10.88	10.98	10.1%
CO ₂ / TPES (tCO ₂ per TJ)	53.4	51.2	48.4	46.0	42.2	42.4	43.9	-17.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.39	0.38	0.34	0.30	0.26	0.27	0.27	-31.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.43	0.43	0.38	0.34	0.29	0.30	0.30	-31.0%
CO ₂ / population (tCO ₂ per capita)	10.83	11.37	11.58	10.79	9.35	9.93	9.89	-8.7%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	107	110	105	93	100	101	0.6%
Population	100	102	103	105	108	109	110	10.1%
GDP per population (GDP per capita)	100	106	121	128	129	131	132	32.4%
Energy intensity (TPES/GDP)	100	103	97	90	85	88	84	-16.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	96	91	86	79	79	82	-17.8%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	10.63	50.59	34.92	12.45	108.59	0.6%
Main activity producer elec. and heat	6.56	0.18	8.67	2.85	18.24	-16.9%
Unallocated autoproducers	0.40	0.04	0.84	0.05	1.33	-58.0%
Other energy industry own use	0.28	4.13	0.24	-	4.66	-23.4%
Manufacturing industries and construction	2.96	8.07	12.81	9.55	33.40	8.9%
Transport	-	26.35	0.01	-	26.36	31.8%
<i>of which: road</i>	-	25.64	-	-	25.64	33.1%
Other	0.43	11.82	12.35	-	24.60	-5.6%
<i>of which: residential</i>	0.42	7.90	6.52	-	14.84	-19.6%
Reference Approach	10.97	52.79	34.93	12.45	111.13	1.5%
Diff. due to losses and/or transformation	0.41	3.56	0.00	-	3.97	
Statistical differences	-0.08	-1.36	-0.00	0.00	-1.43	
<i>Memo: international marine bunkers</i>	-	21.59	-	-	21.59	67.3%
<i>Memo: international aviation bunkers</i>	-	4.36	-	-	4.36	55.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	25.64	33.1%	19.4	19.4
Manufacturing industries - gas	12.81	73.3%	9.7	29.0
Manufacturing industries - other	9.55	+	7.2	36.2
Main activity prod. elec. and heat - gas	8.67	220.5%	6.5	42.8
Manufacturing industries - oil	8.07	2.5%	6.1	48.9
Residential - oil	7.90	-25.6%	6.0	54.8
Main activity prod. elec. and heat - coal/peat	6.56	-63.3%	4.9	59.8
Residential - gas	6.52	12.4%	4.9	64.7
Non-specified other - gas	5.83	141.0%	4.4	69.1
<i>Memo: total CO₂ from fuel combustion</i>	<i>108.59</i>	<i>0.6%</i>	<i>82.0</i>	<i>82.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Benin

Figure 1. CO₂ emissions by fuel

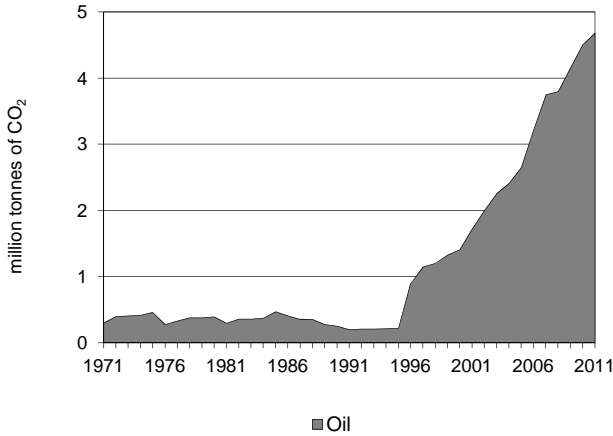


Figure 2. CO₂ emissions by sector

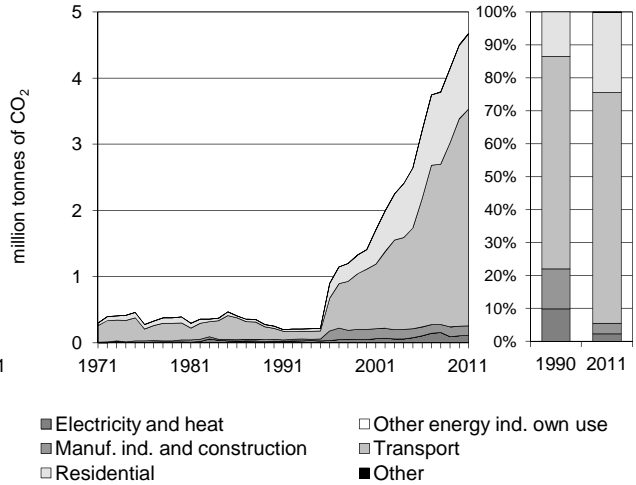


Figure 3. Reference vs Sectoral Approach

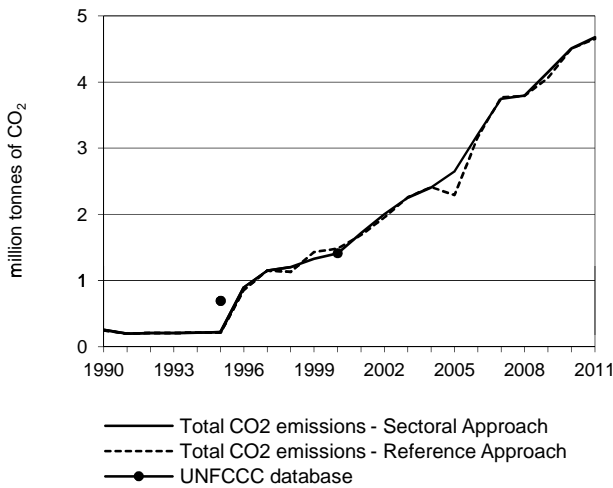


Figure 4. Electricity generation by fuel

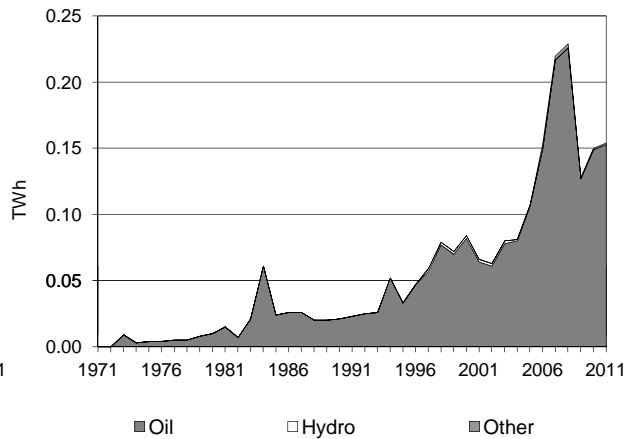


Figure 5. Changes in selected indicators *

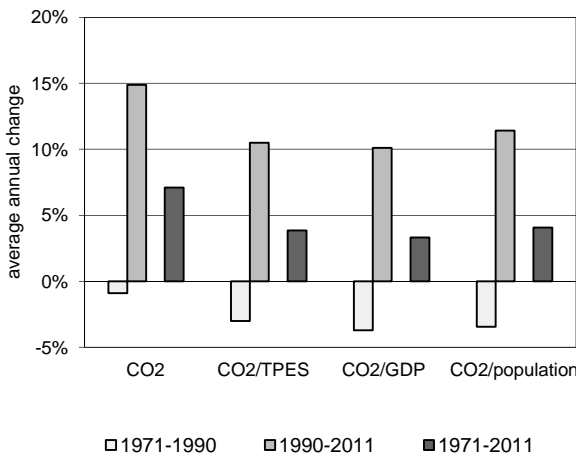
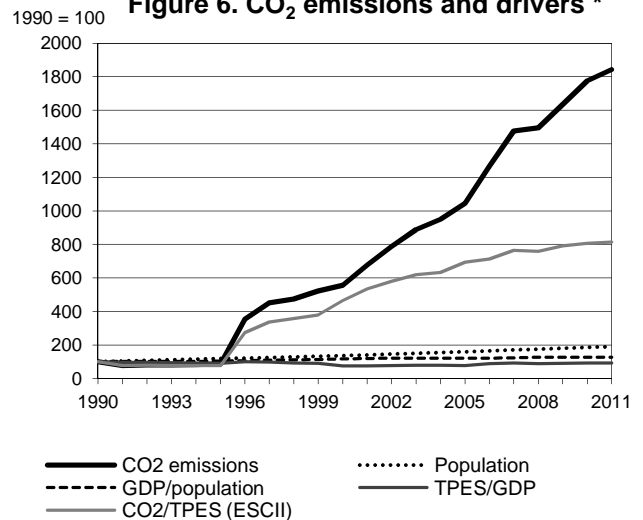


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Benin

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	0.25	0.22	1.41	2.65	4.15	4.50	4.68	+
TPES (PJ)	70	77	83	105	144	153	157	126.4%
GDP (billion 2005 USD)	2.22	2.73	3.55	4.29	5.09	5.25	5.41	143.6%
GDP PPP (billion 2005 USD)	5.33	6.56	8.52	10.30	12.23	12.60	12.99	143.7%
Population (millions)	4.77	5.65	6.52	7.63	8.60	8.85	9.10	90.7%
CO ₂ / TPES (tCO ₂ per TJ)	3.7	2.8	17.0	25.3	28.8	29.5	29.7	714.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.11	0.08	0.40	0.62	0.82	0.86	0.86	656.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.05	0.03	0.17	0.26	0.34	0.36	0.36	656.5%
CO ₂ / population (tCO ₂ per capita)	0.05	0.04	0.22	0.35	0.48	0.51	0.51	866.4%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	86	556	1044	1636	1775	1844	1743.7%
Population	100	118	137	160	180	185	191	90.7%
GDP per population (GDP per capita)	100	104	117	121	127	127	128	27.8%
Energy intensity (TPES/GDP)	100	90	75	78	90	93	93	-7.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	78	466	694	790	807	814	714.4%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	4.68	-	-	4.68	+
Main activity producer elec. and heat	-	0.09	-	-	0.09	265.3%
Unallocated autoproducers	-	0.02	-	-	0.02	x
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	-	0.15	-	-	0.15	380.6%
Transport	-	3.27	-	-	3.27	+
<i>of which: road</i>	-	3.27	-	-	3.27	+
Other	-	1.14	-	-	1.14	+
<i>of which: residential</i>	-	1.14	-	-	1.14	+
Reference Approach	-	4.65	-	-	4.65	+
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	-0.02	-	-	-0.02	-
<i>Memo: international marine bunkers</i>	-	..	-	-
<i>Memo: international aviation bunkers</i>	-	0.49	-	-	0.49	862.5%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	3.27	+	18.9	18.9
Residential - oil	1.14	+	6.6	25.4
Manufacturing industries - oil	0.15	380.6%	0.9	26.3
Main activity prod. elec. and heat - oil	0.09	265.3%	0.5	26.8
Unallocated autoproducers - oil	0.02	x	0.1	26.9
Non-specified other - oil	0.01	x	0.0	26.9
Other transport - oil	0.00	x	0.0	27.0
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>4.68</i>	<i>+</i>	<i>27.0</i>	<i>27.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Bolivia

Figure 1. CO₂ emissions by fuel

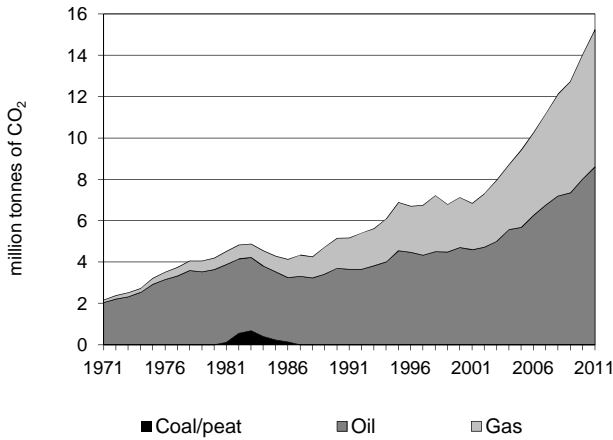


Figure 2. CO₂ emissions by sector

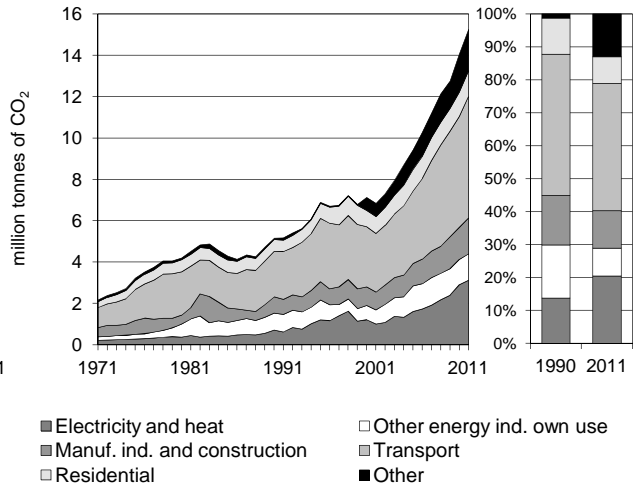


Figure 3. Reference vs Sectoral Approach

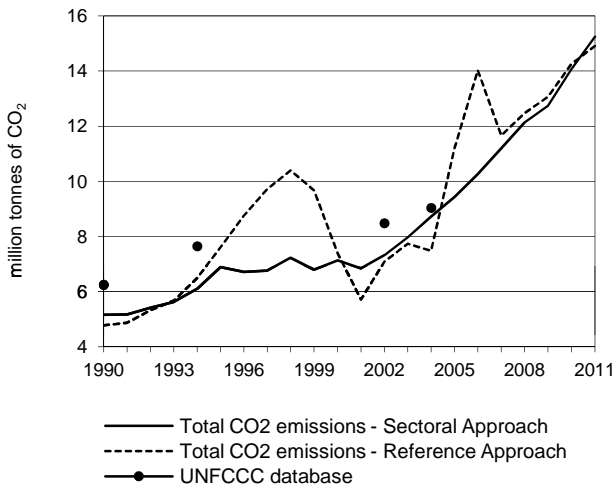


Figure 4. Electricity generation by fuel

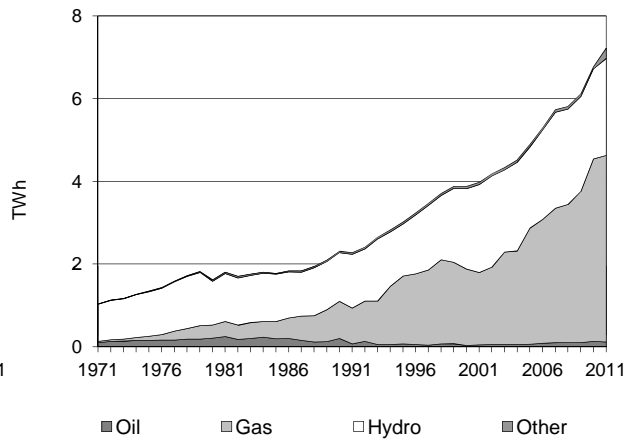


Figure 5. Changes in selected indicators *

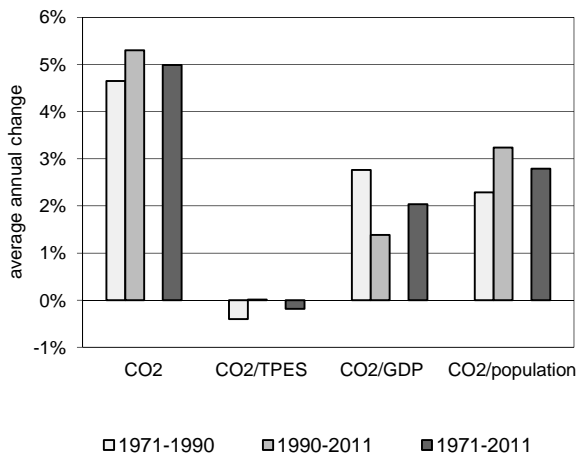
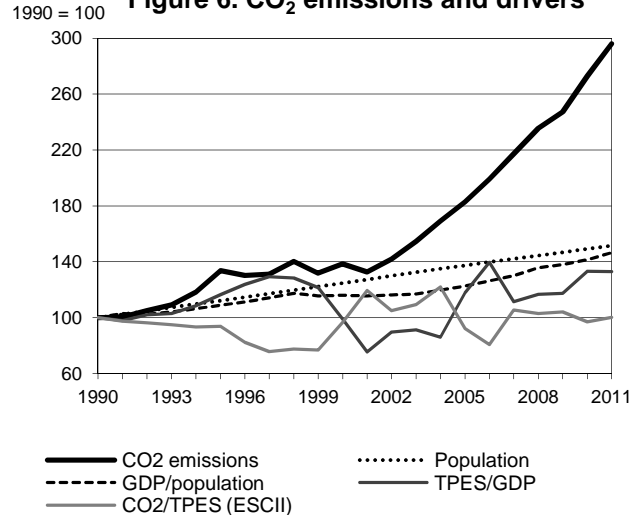


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Bolivia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	5.15	6.89	7.13	9.43	12.74	14.06	15.25	195.9%
TPES (PJ)	109	156	156	217	260	307	323	195.1%
GDP (billion 2005 USD)	5.67	6.93	8.20	9.55	11.48	11.95	12.57	121.9%
GDP PPP (billion 2005 USD)	20.47	25.02	29.63	34.50	41.48	43.19	45.43	121.9%
Population (millions)	6.66	7.47	8.31	9.15	9.77	9.93	10.09	51.5%
CO ₂ / TPES (tCO ₂ per TJ)	47.1	44.2	45.6	43.4	49.1	45.7	47.3	0.3%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.91	0.99	0.87	0.99	1.11	1.18	1.21	33.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.25	0.28	0.24	0.27	0.31	0.33	0.34	33.4%
CO ₂ / population (tCO ₂ per capita)	0.77	0.92	0.86	1.03	1.30	1.42	1.51	95.3%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	134	138	183	247	273	296	195.9%
Population	100	112	125	137	147	149	152	51.5%
GDP per population (GDP per capita)	100	109	116	123	138	141	146	46.5%
Energy intensity (TPES/GDP)	100	117	99	118	117	133	133	33.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	94	97	92	104	97	100	0.3%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	8.61	6.64	-	15.25	195.9%
Main activity producer elec. and heat	-	0.11	3.02	-	3.13	388.4%
Unallocated autoproducers
Other energy industry own use	-	0.30	0.98	-	1.28	53.9%
Manufacturing industries and construction	-	0.32	1.42	-	1.73	122.9%
Transport	-	4.87	1.02	-	5.89	167.3%
<i>of which: road</i>	-	4.57	1.02	-	5.59	201.3%
Other	-	3.02	0.20	-	3.22	410.2%
<i>of which: residential</i>	-	1.11	0.13	-	1.23	117.5%
Reference Approach	-	8.65	6.26	-	14.91	212.4%
Diff. due to losses and/or transformation	-	0.50	0.03	-	0.52	
Statistical differences	-	-0.45	-0.41	-	-0.86	
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	0.15	-	-	0.15	x

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	4.57	146.4%	9.2	9.2
Main activity prod. elec. and heat - gas	3.02	477.5%	6.1	15.3
Non-specified other - oil	1.91	+	3.8	19.1
Manufacturing industries - gas	1.42	267.8%	2.9	22.0
Residential - oil	1.11	95.2%	2.2	24.2
Road - gas	1.02	x	2.1	26.3
Other energy industry own use - gas	0.98	83.0%	2.0	28.2
Manufacturing industries - oil	0.32	-19.4%	0.6	28.9
Other energy industry own use - oil	0.30	1.1%	0.6	29.5
<i>Memo: total CO₂ from fuel combustion</i>	15.25	195.9%	30.7	30.7

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Bosnia and Herzegovina

Figure 1. CO₂ emissions by fuel

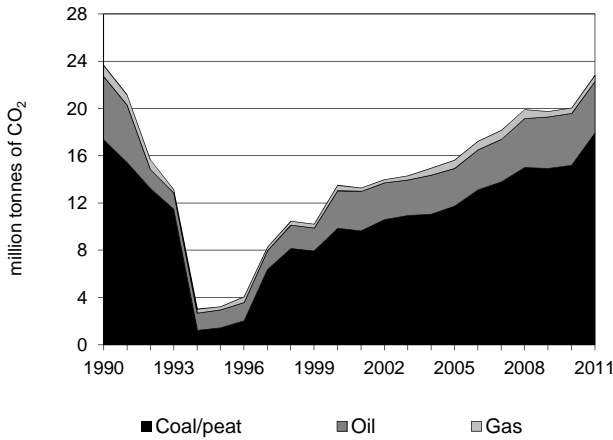


Figure 2. CO₂ emissions by sector

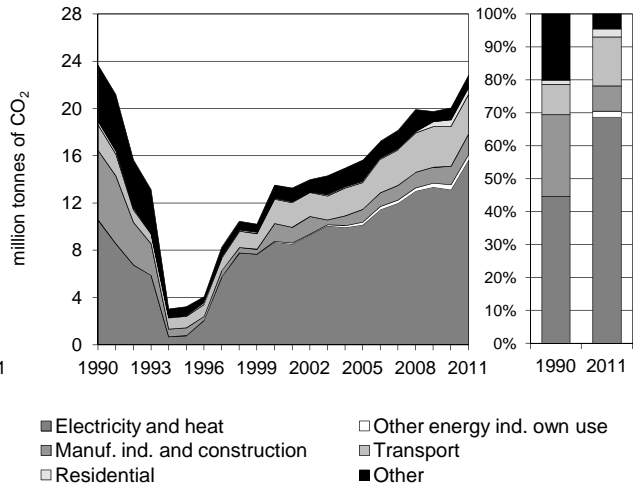


Figure 3. Reference vs Sectoral Approach

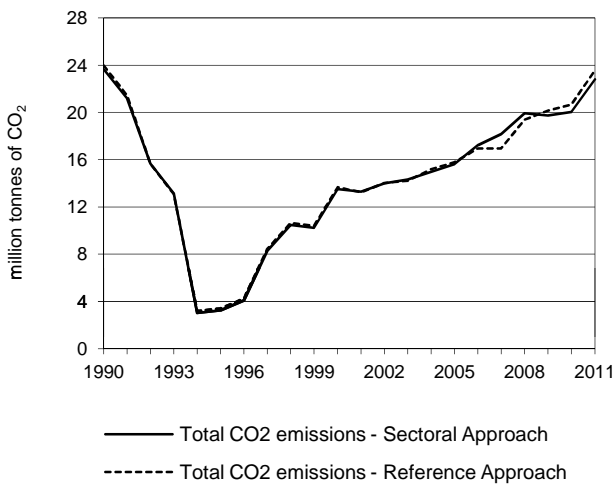


Figure 4. Electricity generation by fuel

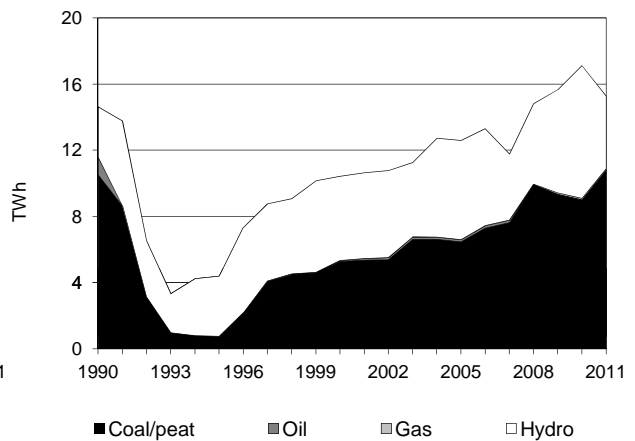


Figure 5. Changes in selected indicators *

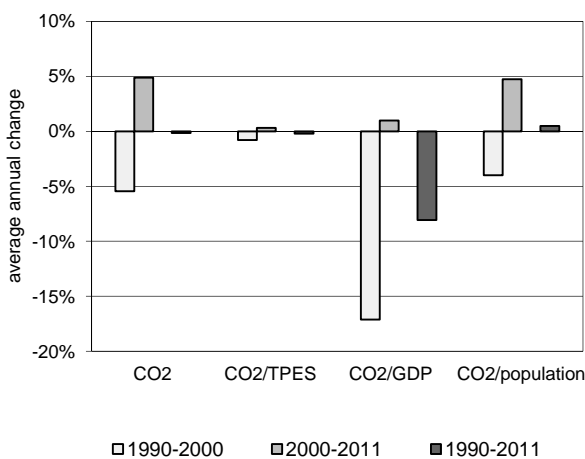
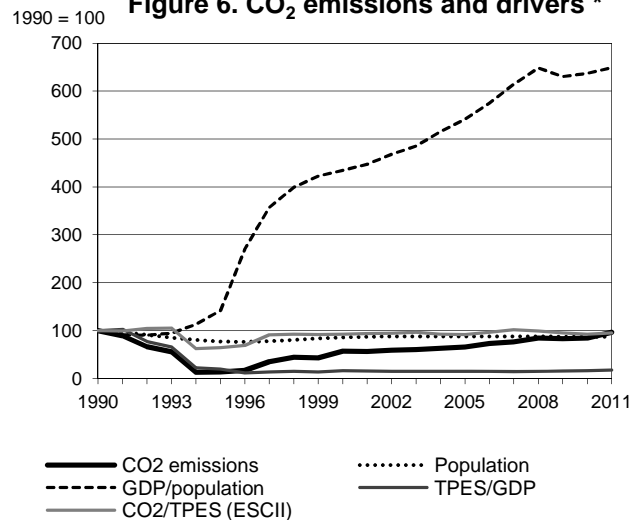


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Bosnia and Herzegovina

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	23.65	3.24	13.51	15.63	19.74	20.05	22.81	-3.6%
TPES (PJ)	294	63	182	211	258	270	297	1.1%
GDP (billion 2005 USD)	2.31	2.53	8.60	10.95	12.71	12.82	13.04	465.5%
GDP PPP (billion 2005 USD)	5.05	5.55	18.82	23.98	27.84	28.07	28.55	465.5%
Population (millions)	4.31	3.33	3.69	3.78	3.77	3.76	3.75	-12.9%
CO ₂ / TPES (tCO ₂ per TJ)	80.5	51.7	74.2	74.0	76.5	74.2	76.8	-4.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	10.26	1.28	1.57	1.43	1.55	1.56	1.75	-82.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	4.69	0.58	0.72	0.65	0.71	0.71	0.80	-82.9%
CO ₂ / population (tCO ₂ per capita)	5.49	0.97	3.66	4.13	5.24	5.33	6.08	10.7%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	14	57	66	83	85	96	-3.6%
Population	100	77	86	88	87	87	87	-12.9%
GDP per population (GDP per capita)	100	142	435	541	631	637	649	549.3%
Energy intensity (TPES/GDP)	100	19	17	15	16	17	18	-82.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	64	92	92	95	92	95	-4.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	17.92	4.36	0.53	-	22.81	-3.6%
Main activity producer elec. and heat	14.54	0.13	0.11	-	14.79	55.3%
Unallocated autoproducers	0.84	-	0.03	-	0.88	-13.7%
Other energy industry own use	0.32	0.10	-	-	0.42	x
Manufacturing industries and construction	1.45	0.08	0.22	-	1.75	-70.3%
Transport	-	3.37	-	-	3.37	55.5%
<i>of which: road</i>	-	3.37	-	-	3.37	55.5%
Other	0.77	0.67	0.16	-	1.60	-68.3%
<i>of which: residential</i>	0.46	-	0.10	-	0.56	91.1%
Reference Approach	18.61	4.42	0.53	-	23.56	-1.7%
Diff. due to losses and/or transformation	0.58	0.17	0.00	-	0.75	
Statistical differences	0.11	-0.11	-	-	-0.00	
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.02	-	-	0.02	-80.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	14.54	54.6%	50.2	50.2
Road - oil	3.37	55.5%	11.6	61.9
Manufacturing industries - coal/peat	1.45	-54.5%	5.0	66.9
Unallocated autoproducers - coal/peat	0.84	x	2.9	69.8
Non-specified other - oil	0.67	x	2.3	72.1
Residential - coal/peat	0.46	x	1.6	73.7
Other energy industry - coal/peat	0.32	x	1.1	74.8
Non-specified other sectors - coal/peat	0.31	-93.4%	1.1	75.9
Manufacturing industries - gas	0.22	-70.0%	0.8	76.7
<i>Memo: total CO₂ from fuel combustion</i>	<i>22.81</i>	<i>-3.6%</i>	<i>78.8</i>	<i>78.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Botswana

Figure 1. CO₂ emissions by fuel

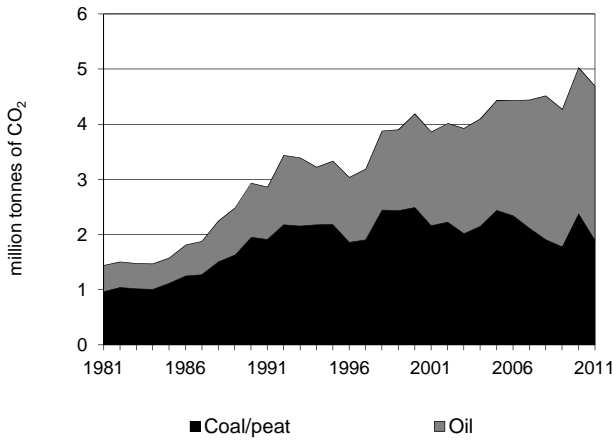


Figure 2. CO₂ emissions by sector

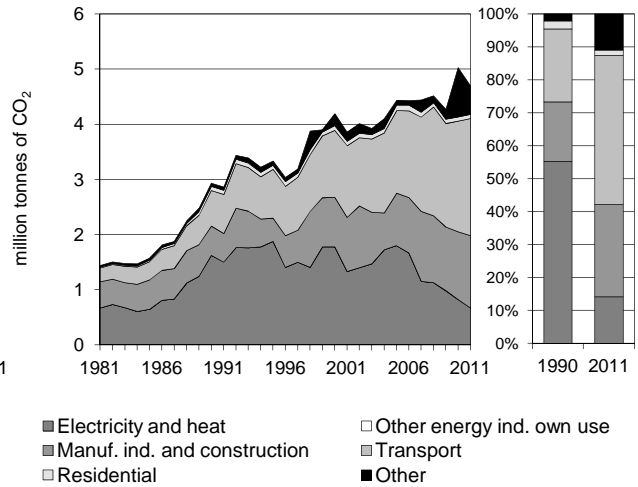


Figure 3. Reference vs Sectoral Approach

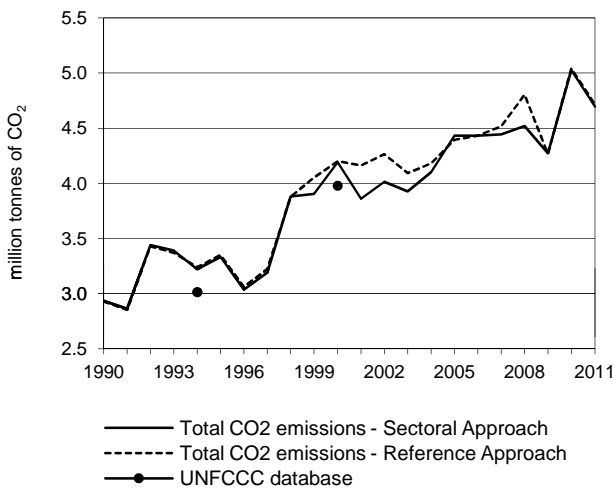


Figure 4. Electricity generation by fuel

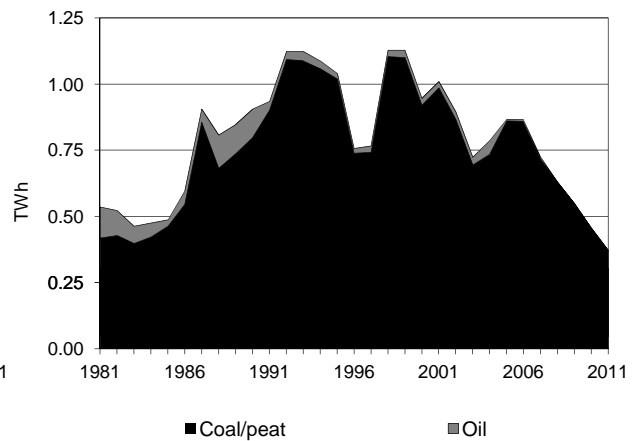


Figure 5. Changes in selected indicators *

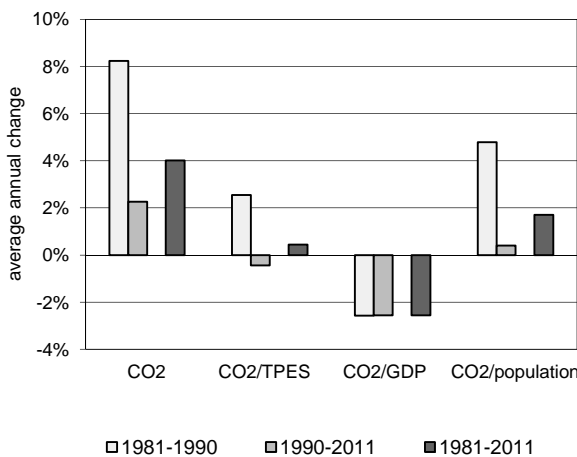
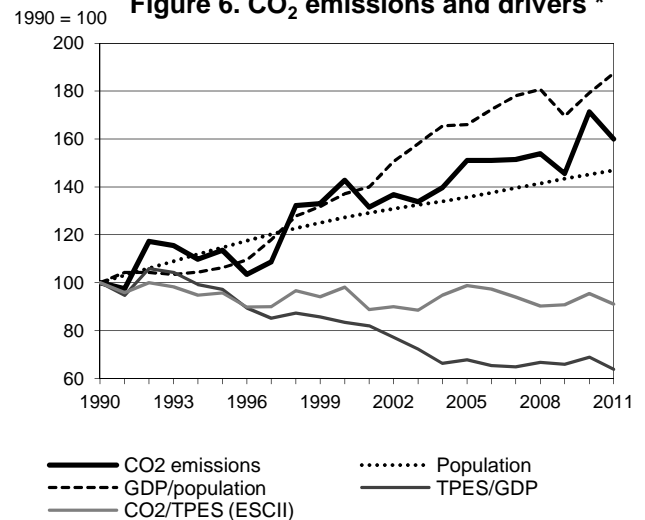


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Botswana

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2.93	3.33	4.19	4.43	4.27	5.03	4.69	60.0%
TPES (PJ)	53	63	77	81	85	95	93	75.6%
GDP (billion 2005 USD)	4.55	5.55	7.94	10.26	11.07	11.85	12.53	175.3%
GDP PPP (billion 2005 USD)	9.61	11.71	16.76	21.65	23.37	25.01	26.44	175.3%
Population (millions)	1.38	1.59	1.76	1.88	1.98	2.01	2.03	47.0%
CO ₂ / TPES (tCO ₂ per TJ)	55.6	53.2	54.5	54.9	50.4	53.1	50.6	-8.9%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.65	0.60	0.53	0.43	0.39	0.42	0.37	-41.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.31	0.28	0.25	0.20	0.18	0.20	0.18	-41.9%
CO ₂ / population (tCO ₂ per capita)	2.12	2.10	2.38	2.36	2.16	2.51	2.31	8.8%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	114	143	151	146	171	160	60.0%
Population	100	115	127	136	143	145	147	47.0%
GDP per population (GDP per capita)	100	106	137	166	170	179	187	87.3%
Energy intensity (TPES/GDP)	100	97	83	68	66	69	64	-36.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	96	98	99	91	95	91	-8.9%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	1.89	2.80	-	-	4.69	60.0%
Main activity producer elec. and heat	0.66	-	-	-	0.66	-48.4%
Unallocated autoproducers	..	..	..	..	..	..
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	0.81	0.51	-	-	1.31	147.9%
Transport	-	2.12	-	-	2.12	228.1%
<i>of which: road</i>	-	2.08	-	-	2.08	246.3%
Other	0.42	0.17	-	-	0.59	338.0%
<i>of which: residential</i>	-	0.08	-	-	0.08	6.2%
Reference Approach	1.89	2.82	-	-	4.72	61.1%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	0.00	0.02	-	-	0.02	-
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.05	-	-	0.05	54.5%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	2.08	246.3%	17.7	17.7
Manufacturing industries - coal/peat	0.81	87.2%	6.9	24.5
Main activity prod. elec. and heat - coal/peat	0.66	-43.1%	5.7	30.2
Manufacturing industries - oil	0.51	410.4%	4.3	34.5
Non-specified other sectors - coal/peat	0.42	+	3.6	38.1
Non-specified other - oil	0.09	59.0%	0.8	38.9
Residential - oil	0.08	22.2%	0.7	39.6
Other transport - oil	0.05	-3.5%	0.4	39.9
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>4.69</i>	<i>60.0%</i>	<i>39.9</i>	<i>39.9</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Brazil

Figure 1. CO₂ emissions by fuel

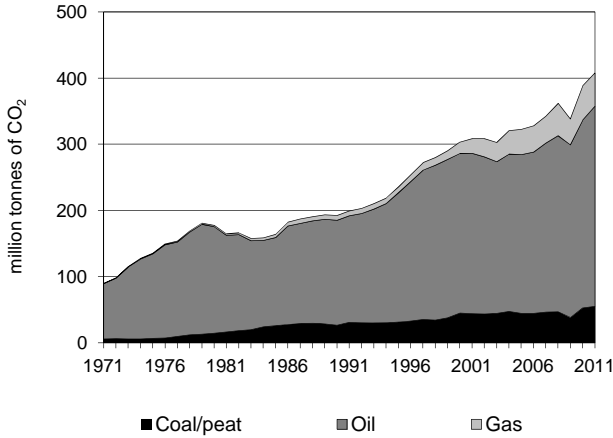


Figure 2. CO₂ emissions by sector

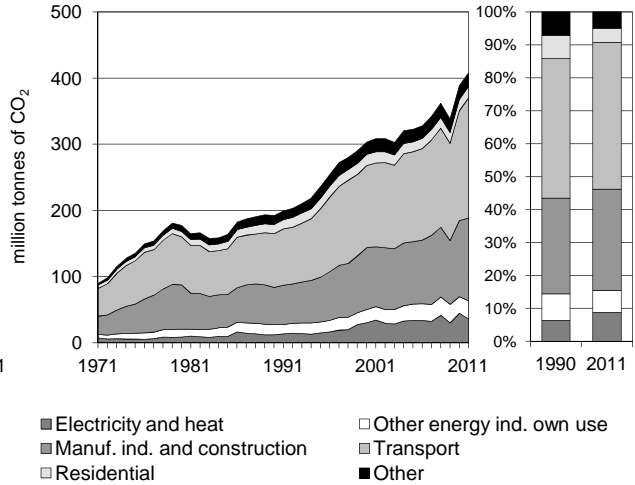


Figure 3. Reference vs Sectoral Approach

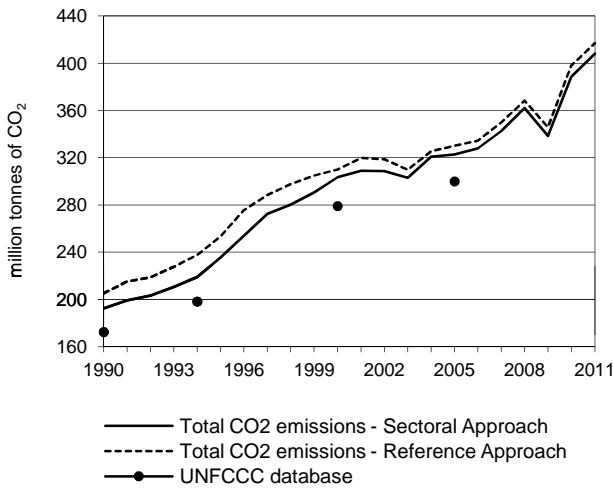


Figure 4. Electricity generation by fuel

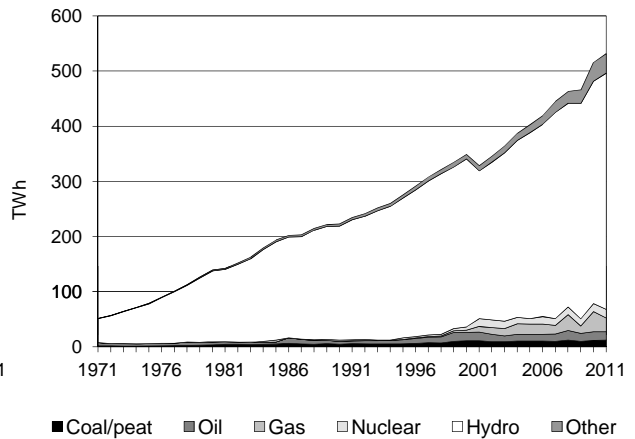


Figure 5. Changes in selected indicators *

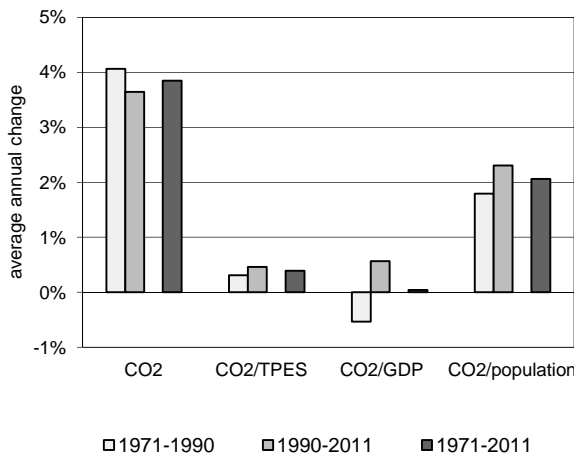
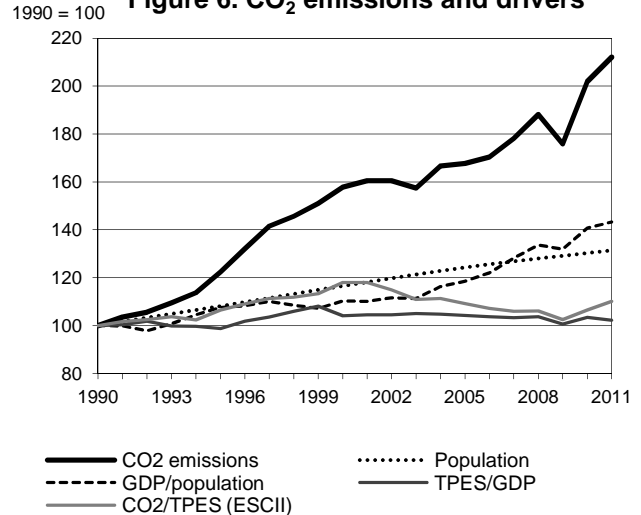


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Brazil

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	192.38	235.57	303.58	322.68	338.31	388.52	408.00	112.1%
TPES (PJ)	5 870	6 745	7 848	9 016	10 068	11 132	11 306	92.6%
GDP (billion 2005 USD)	598.51	696.14	768.99	882.19	1 019.92	1 096.75	1 126.72	88.3%
GDP PPP (billion 2005 USD)	1 073.73	1 248.88	1 379.58	1 582.64	1 829.73	1 967.58	2 021.34	88.3%
Population (millions)	149.65	161.85	174.43	185.99	193.25	194.95	196.66	31.4%
CO ₂ / TPES (tCO ₂ per TJ)	32.8	34.9	38.7	35.8	33.6	34.9	36.1	10.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.32	0.34	0.39	0.37	0.33	0.35	0.36	12.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.18	0.19	0.22	0.20	0.18	0.20	0.20	12.6%
CO ₂ / population (tCO ₂ per capita)	1.29	1.46	1.74	1.74	1.75	1.99	2.07	61.4%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	122	158	168	176	202	212	112.1%
Population	100	108	117	124	129	130	131	31.4%
GDP per population (GDP per capita)	100	108	110	119	132	141	143	43.3%
Energy intensity (TPES/GDP)	100	99	104	104	101	103	102	2.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	107	118	109	103	106	110	10.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	55.05	302.60	50.35	-	408.00	112.1%
Main activity producer elec. and heat	6.45	6.81	6.41	-	19.67	208.1%
Unallocated autoproducers	7.97	3.30	5.16	-	16.43	178.3%
Other energy industry own use	3.89	13.76	9.65	-	27.31	76.0%
Manufacturing industries and construction	36.64	65.11	23.47	-	125.22	124.0%
Transport	-	177.38	4.52	-	181.90	123.7%
<i>of which: road</i>	-	159.38	3.84	-	163.22	131.7%
Other	0.10	36.24	1.13	-	37.48	37.1%
<i>of which: residential</i>	-	16.64	0.62	-	17.26	25.5%
Reference Approach	60.72	303.48	52.83	-	417.04	103.4%
Diff. due to losses and/or transformation	5.67	1.79	3.44	-	10.90	
Statistical differences	0.00	- 0.91	- 0.95	-	- 1.86	
<i>Memo: international marine bunkers</i>	-	13.53	-	-	13.53	688.2%
<i>Memo: international aviation bunkers</i>	-	6.36	-	-	6.36	350.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	159.38	126.3%	14.3	14.3
Manufacturing industries - oil	65.11	82.0%	5.8	20.1
Manufacturing industries - coal/peat	36.64	134.7%	3.3	23.4
Manufacturing industries - gas	23.47	418.1%	2.1	25.5
Non-specified other - oil	19.60	46.7%	1.8	27.3
Other transport - oil	18.00	65.5%	1.6	28.9
Residential - oil	16.64	23.9%	1.5	30.4
Other energy industry own use - oil	13.76	27.2%	1.2	31.6
Other energy industry own use - gas	9.65	435.0%	0.9	32.5
<i>Memo: total CO₂ from fuel combustion</i>	<i>408.00</i>	<i>112.1%</i>	<i>36.6</i>	<i>36.6</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Brunei Darussalam

Figure 1. CO₂ emissions by fuel

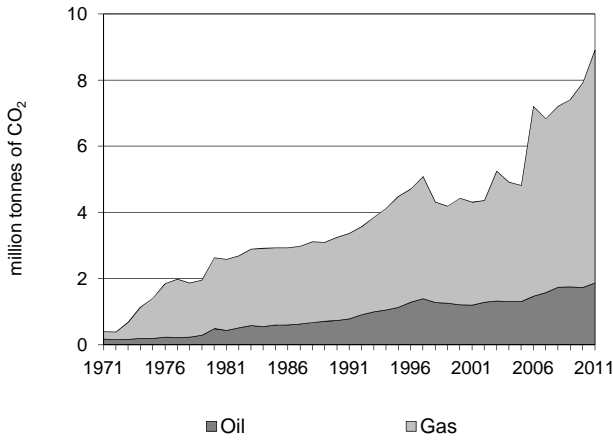


Figure 2. CO₂ emissions by sector

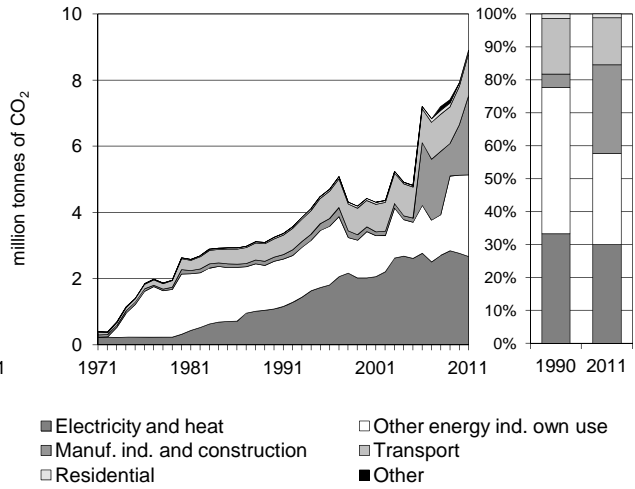


Figure 3. Reference vs Sectoral Approach

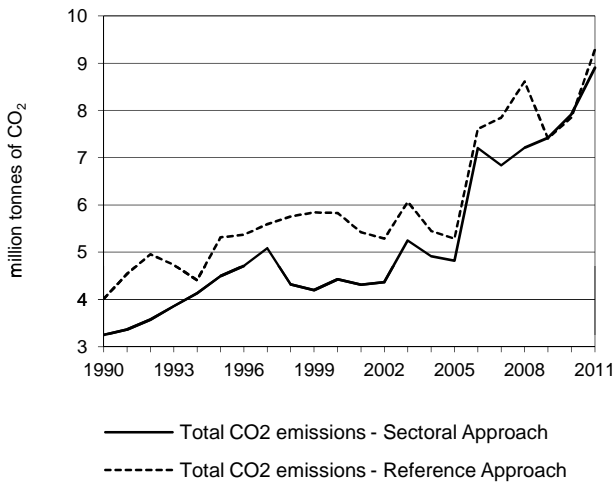


Figure 4. Electricity generation by fuel

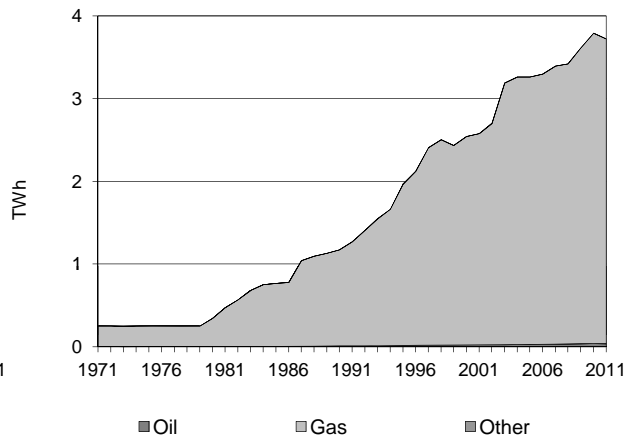


Figure 5. Changes in selected indicators *

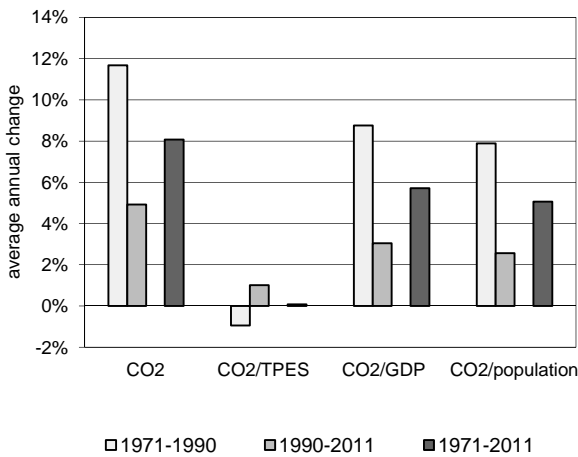
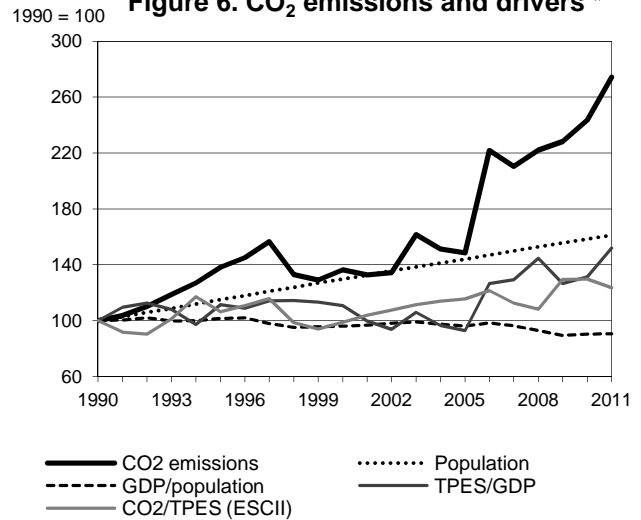


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Brunei Darussalam

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	3.25	4.49	4.43	4.82	7.42	7.92	8.91	174.2%
TPES (PJ)	72	94	100	93	127	136	160	121.9%
GDP (billion 2005 USD)	6.89	8.05	8.60	9.53	9.60	9.85	10.07	46.0%
GDP PPP (billion 2005 USD)	12.71	14.84	15.85	17.57	17.69	18.15	18.55	46.0%
Population (millions)	0.25	0.29	0.33	0.36	0.39	0.40	0.41	61.1%
CO ₂ / TPES (tCO ₂ per TJ)	44.9	47.7	44.4	51.9	58.2	58.3	55.5	23.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.47	0.56	0.51	0.51	0.77	0.80	0.88	87.8%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.26	0.30	0.28	0.27	0.42	0.44	0.48	87.7%
CO ₂ / population (tCO ₂ per capita)	12.89	15.49	13.54	13.28	18.92	19.84	21.94	70.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	138	136	148	228	244	274	174.2%
Population	100	115	130	144	156	158	161	61.1%
GDP per population (GDP per capita)	100	101	96	96	90	90	91	-9.4%
Energy intensity (TPES/GDP)	100	111	111	93	127	131	152	52.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	106	99	116	130	130	124	23.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	1.87	7.03	-	8.91	174.2%
Main activity producer elec. and heat	-	0.03	2.31	-	2.35	116.7%
Unallocated autoproducers	-	-	0.32	-	0.32	x
Other energy industry own use	-	0.04	2.42	-	2.46	71.1%
Manufacturing industries and construction	-	0.48	1.92	-	2.40	+
Transport	-	1.27	-	-	1.27	132.2%
<i>of which: road</i>	-	1.27	-	-	1.27	131.9%
Other	-	0.04	0.06	-	0.10	125.3%
<i>of which: residential</i>	-	0.04	0.06	-	0.10	125.3%
Reference Approach	-	1.85	7.44	-	9.29	131.4%
Diff. due to losses and/or transformation	-	-0.02	0.37	-	0.35	
Statistical differences	-	-0.00	0.03	-	0.03	
<i>Memo: international marine bunkers</i>	-	0.30	-	-	0.30	164.9%
<i>Memo: international aviation bunkers</i>	-	0.34	-	-	0.34	197.2%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Other energy industry own use - gas	2.42	68.3%	16.7	16.7
Main activity prod. elec. and heat - gas	2.31	115.7%	16.0	32.7
Manufacturing industries - gas	1.92	x	13.3	46.0
Road - oil	1.27	131.9%	8.8	54.8
Manufacturing industries - oil	0.48	262.4%	3.3	58.1
Unallocated autoproducers - gas	0.32	x	2.2	60.3
Residential - gas	0.06	x	0.4	60.7
Other energy industry own use - oil	0.04	+	0.3	61.1
Residential - oil	0.04	-2.2%	0.3	61.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>8.91</i>	<i>174.2%</i>	<i>61.6</i>	<i>61.6</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Bulgaria

Figure 1. CO₂ emissions by fuel

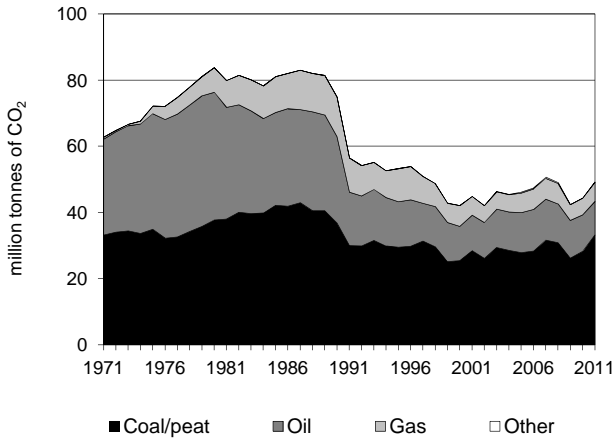


Figure 2. CO₂ emissions by sector

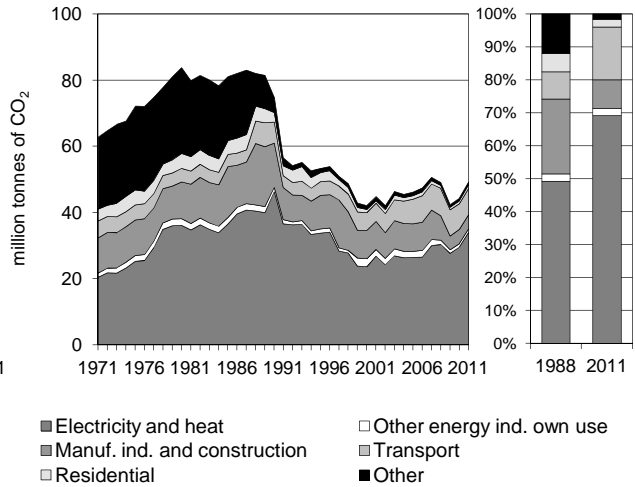


Figure 3. Reference vs Sectoral Approach

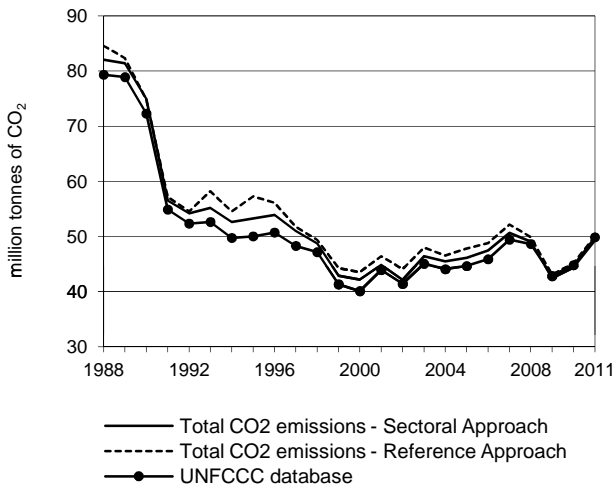


Figure 4. Electricity generation by fuel

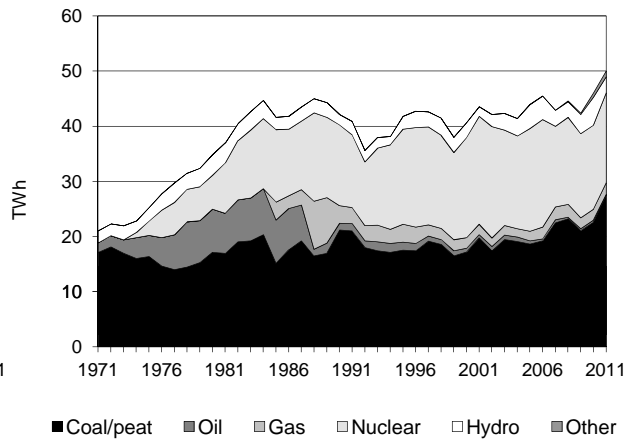


Figure 5. Changes in selected indicators *

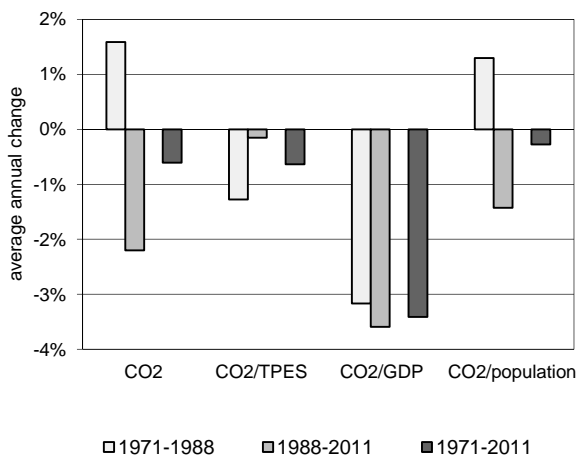
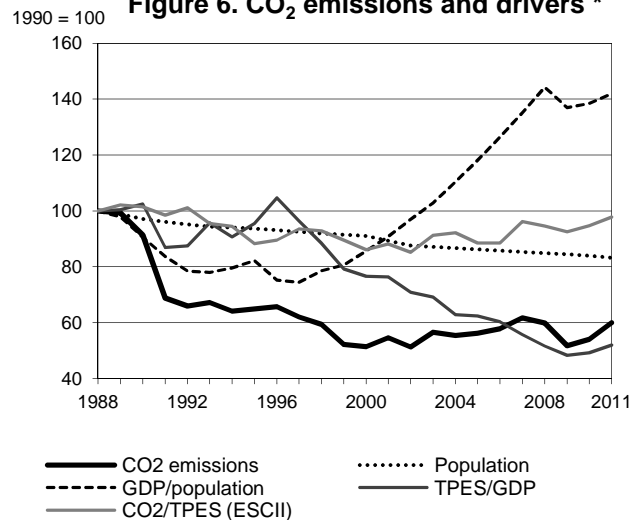


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Bulgaria *

Key indicators

	1988	1990	1995	2005	2009	2010	2011	% change 88-11
CO ₂ Sectoral Approach (MtCO ₂)	82.07	74.94	53.27	46.13	42.43	44.37	49.22	-40.0%
TPES (PJ)	1 312	1 181	964	833	733	749	805	-38.7%
GDP (billion 2005 USD)	28.40	24.97	21.87	28.90	32.86	32.99	33.55	18.1%
GDP PPP (billion 2005 USD)	74.63	65.60	57.46	75.92	86.34	86.69	88.16	18.1%
Population (millions)	8.98	8.72	8.41	7.74	7.59	7.53	7.48	-16.8%
CO ₂ / TPES (tCO ₂ per TJ)	62.6	63.4	55.2	55.4	57.9	59.2	61.2	-2.2%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	2.89	3.00	2.44	1.60	1.29	1.34	1.47	-49.2%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.10	1.14	0.93	0.61	0.49	0.51	0.56	-49.2%
CO ₂ / population (tCO ₂ per capita)	9.14	8.60	6.34	5.96	5.59	5.89	6.58	-28.0%
CO₂ emissions and drivers - Kaya decomposition (1988=100) **								
CO ₂ emissions	100	91	65	56	52	54	60	-40.0%
Population	100	97	94	86	84	84	83	-16.8%
GDP per population (GDP per capita)	100	91	82	118	137	138	142	41.9%
Energy intensity (TPES/GDP)	100	102	95	62	48	49	52	-48.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	101	88	89	92	95	98	-2.2%

* Under the Convention Bulgaria is allowed to use 1988 as the base year. ** Please see Part I, Chapter 1 for methodological notes. Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 88-11
Sectoral Approach	33.25	10.11	5.80	0.07	49.22	-40.0%
Main activity producer elec. and heat	31.24	0.46	2.31	-	34.01	-12.0%
Unallocated autoproducers	-	0.01	0.03	-	0.03	-98.1%
Other energy industry own use	0.00	0.93	0.09	-	1.02	-44.8%
Manufacturing industries and construction	1.03	0.86	2.36	0.07	4.32	-76.8%
Transport	-	7.27	0.62	-	7.89	16.3%
<i>of which: road</i>	-	7.15	0.14	-	7.29	7.5%
Other	0.97	0.59	0.39	-	1.96	-86.4%
<i>of which: residential</i>	0.93	0.07	0.13	-	1.13	-74.9%
Reference Approach	33.27	10.68	5.95	0.07	49.98	-40.9%
Diff. due to losses and/or transformation	0.30	0.40	0.10	-	0.80	
Statistical differences	-0.27	0.17	0.06	-	-0.05	
<i>Memo: international marine bunkers</i>	-	0.24	-	-	0.24	-74.9%
<i>Memo: international aviation bunkers</i>	-	0.50	-	-	0.50	-60.3%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 88-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	31.24	30.7%	47.7	47.7
Road - oil	7.15	5.4%	10.9	58.6
Manufacturing industries - gas	2.36	x	3.6	62.2
Main activity prod. elec. and heat - gas	2.31	-64.9%	3.5	65.7
Manufacturing industries - coal/peat	1.03	-90.7%	1.6	67.3
Residential - coal/peat	0.93	-72.3%	1.4	68.7
Other energy industry own use - oil	0.93	-49.7%	1.4	70.2
Manufacturing industries - oil	0.86	-88.7%	1.3	71.5
Non-specified other - oil	0.52	-88.2%	0.8	72.3
<i>Memo: total CO₂ from fuel combustion</i>	<i>49.22</i>	<i>-40.0%</i>	<i>75.2</i>	<i>75.2</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Cambodia

Figure 1. CO₂ emissions by fuel

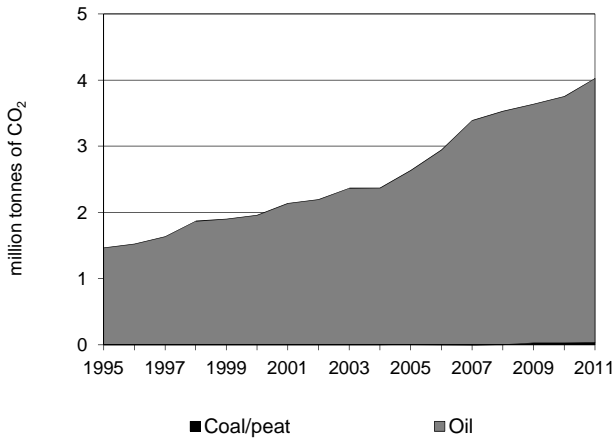


Figure 2. CO₂ emissions by sector

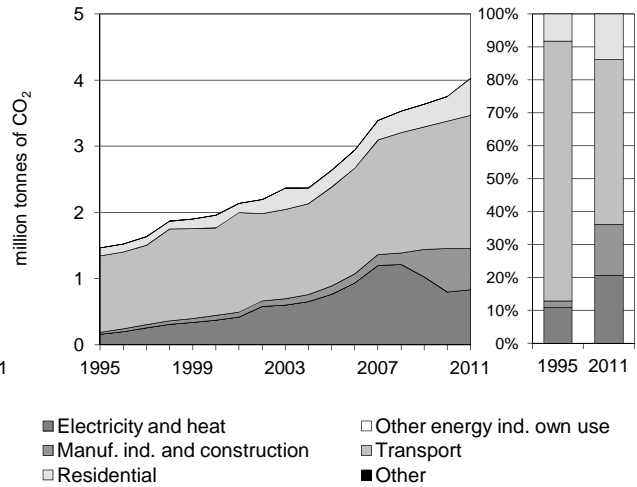


Figure 3. Reference vs Sectoral Approach

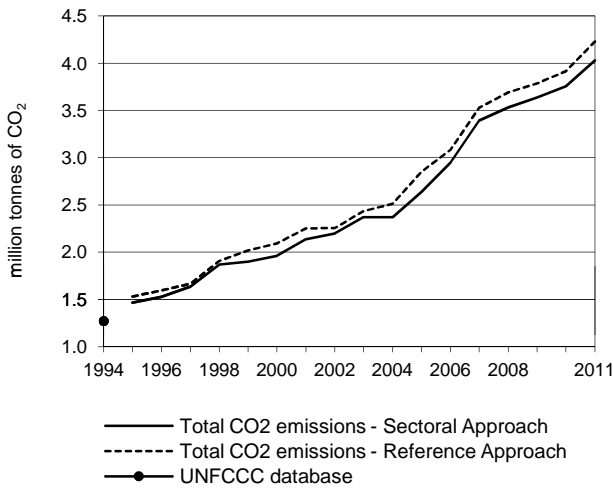


Figure 4. Electricity generation by fuel

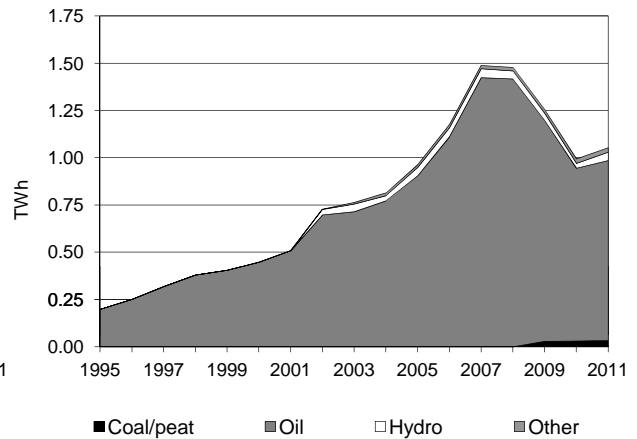


Figure 5. Changes in selected indicators *

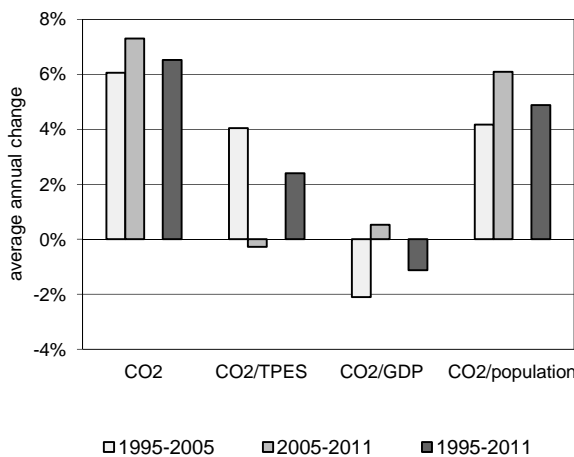
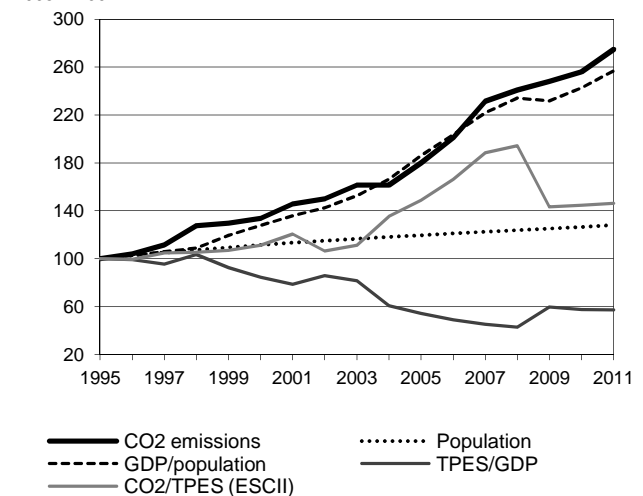


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Cambodia *

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 95-11
CO ₂ Sectoral Approach (MtCO ₂)	..	1.47	1.96	2.64	3.64	3.76	4.03	174.7%
TPES (PJ)	..	119	143	144	205	210	223	88.0%
GDP (billion 2005 USD)	..	2.83	4.03	6.29	8.20	8.69	9.31	228.9%
GDP PPP (billion 2005 USD)	..	9.06	12.89	20.14	26.26	27.83	29.79	228.9%
Population (millions)	..	11.17	12.45	13.36	13.98	14.14	14.31	28.1%
CO ₂ / TPES (tCO ₂ per TJ)	..	12.3	13.7	18.3	17.7	17.9	18.0	46.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	..	0.52	0.49	0.42	0.44	0.43	0.43	-16.5%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	..	0.16	0.15	0.13	0.14	0.14	0.14	-16.5%
CO ₂ / population (tCO ₂ per capita)	..	0.13	0.16	0.20	0.26	0.27	0.28	114.5%
CO₂ emissions and drivers - Kaya decomposition (1995=100) **								
CO ₂ emissions	..	100	134	180	248	256	275	174.7%
Population	..	100	111	120	125	127	128	28.1%
GDP per population (GDP per capita)	..	100	128	186	232	243	257	156.8%
Energy intensity (TPES/GDP)	..	100	85	54	60	58	57	-42.8%
Carbon intensity: ESCII (CO ₂ /TPES)	..	100	111	149	143	145	146	46.1%

* Prior to 1995, data for Cambodia were included in Other Asia. ** Please see Part I, Chapter 1 for methodological notes. Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 95-11
Sectoral Approach	0.04	3.99	-	-	4.03	174.7%
Main activity producer elec. and heat	0.04	0.80	-	-	0.83	423.9%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	-	0.62	-	-	0.62	+
Transport	-	2.01	-	-	2.01	74.2%
<i>of which: road</i>	-	1.65	-	-	1.65	55.5%
Other	-	0.56	-	-	0.56	361.4%
<i>of which: residential</i>	-	0.56	-	-	0.56	361.4%
Reference Approach	0.04	4.19	-	-	4.23	176.1%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	0.20	-	-	0.20	-
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.08	-	-	0.08	170.0%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 95-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	1.65	55.5%	2.9	2.9
Main activity prod. elec. and heat - oil	0.80	401.6%	1.4	4.3
Manufacturing industries - oil	0.62	+	1.1	5.4
Residential - oil	0.56	361.4%	1.0	6.3
Other transport - oil	0.36	292.2%	0.6	7.0
Main activity prod. elec. and heat - coal/peat	0.04	x	0.1	7.0
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>4.03</i>	<i>174.7%</i>	<i>7.0</i>	<i>7.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Cameroon

Figure 1. CO₂ emissions by fuel

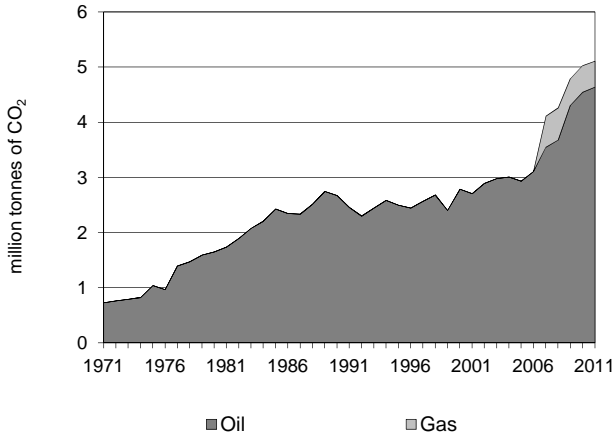


Figure 2. CO₂ emissions by sector

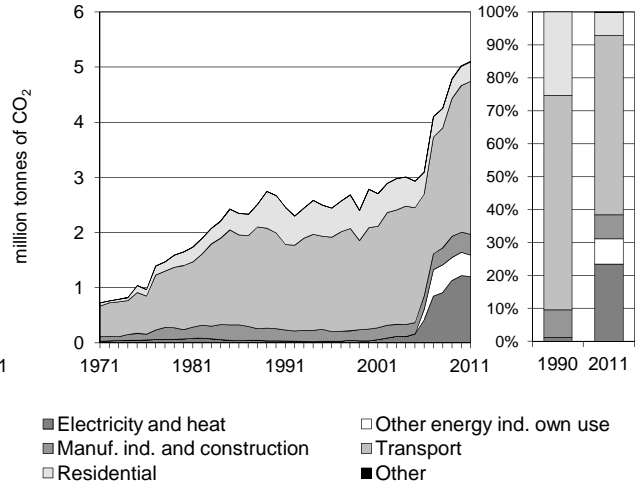


Figure 3. Reference vs Sectoral Approach

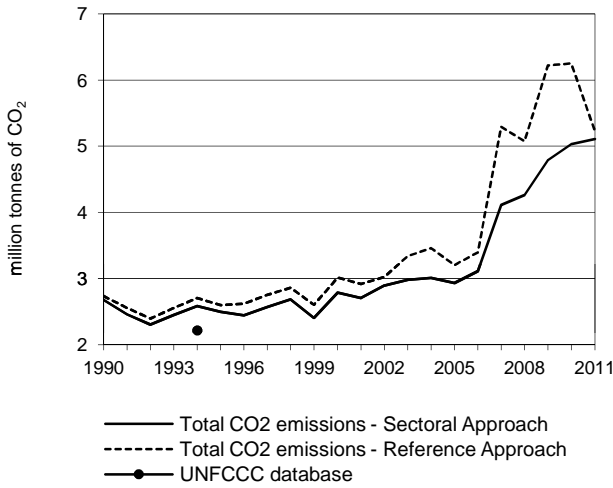


Figure 4. Electricity generation by fuel

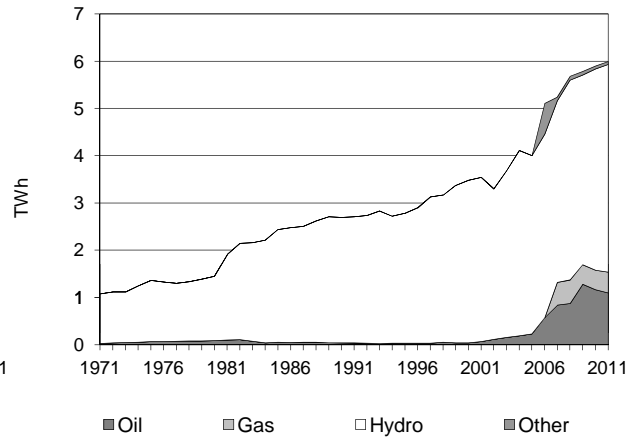


Figure 5. Changes in selected indicators *

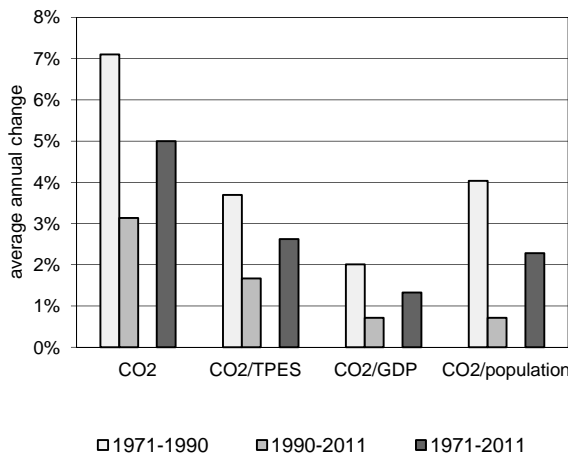
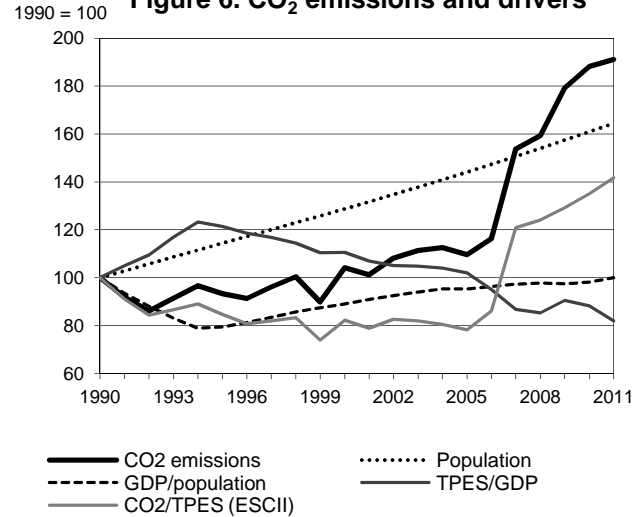


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Cameroon

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2.67	2.50	2.79	2.93	4.79	5.03	5.11	91.1%
TPES (PJ)	209	230	264	292	289	291	281	34.9%
GDP (billion 2005 USD)	12.07	10.97	13.83	16.59	18.51	19.06	19.86	64.5%
GDP PPP (billion 2005 USD)	25.36	23.04	29.06	34.86	38.90	40.04	41.72	64.5%
Population (millions)	12.18	13.94	15.68	17.55	19.18	19.60	20.03	64.4%
CO ₂ / TPES (tCO ₂ per TJ)	12.8	10.8	10.5	10.0	16.6	17.3	18.2	41.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.22	0.23	0.20	0.18	0.26	0.26	0.26	16.2%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.11	0.11	0.10	0.08	0.12	0.13	0.12	16.2%
CO ₂ / population (tCO ₂ per capita)	0.22	0.18	0.18	0.17	0.25	0.26	0.26	16.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	93	104	110	179	188	191	91.1%
Population	100	114	129	144	157	161	164	64.4%
GDP per population (GDP per capita)	100	79	89	95	97	98	100	0.1%
Energy intensity (TPES/GDP)	100	121	111	102	90	88	82	-18.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	85	82	78	129	135	142	41.7%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	4.64	0.47	-	5.11	91.1%
Main activity producer elec. and heat	-	0.18	-	-	0.18	416.0%
Unallocated autoproducers	-	0.78	0.24	-	1.02	x
Other energy industry own use	-	0.16	0.24	-	0.39	x
Manufacturing industries and construction	-	0.37	-	-	0.37	67.2%
Transport	-	2.77	-	-	2.77	59.7%
<i>of which: road</i>	-	2.64	-	-	2.64	52.2%
Other	-	0.37	-	-	0.37	-45.8%
<i>of which: residential</i>	-	0.36	-	-	0.36	-47.5%
Reference Approach	-	4.67	0.56	-	5.22	91.3%
Diff. due to losses and/or transformation	-	0.10	0.08	-	0.19	
Statistical differences	-	-0.07	0.00	-	-0.07	
<i>Memo: international marine bunkers</i>	-	0.14	-	-	0.14	245.2%
<i>Memo: international aviation bunkers</i>	-	0.21	-	-	0.21	41.7%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	2.64	52.2%	6.6	6.6
Unallocated autoproducers - oil	0.78	x	2.0	8.6
Manufacturing industries - oil	0.37	67.2%	0.9	9.5
Residential - oil	0.36	-47.5%	0.9	10.4
Other energy industry own use - gas	0.24	x	0.6	11.0
Unallocated autoproducers - gas	0.24	x	0.6	11.6
Main activity prod. elec. and heat - oil	0.18	416.0%	0.5	12.1
Other energy industry own use - oil	0.16	x	0.4	12.5
Other transport - oil	0.13	x	0.3	12.8
<i>Memo: total CO₂ from fuel combustion</i>	<i>5.11</i>	<i>91.1%</i>	<i>12.8</i>	<i>12.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Canada

Figure 1. CO₂ emissions by fuel

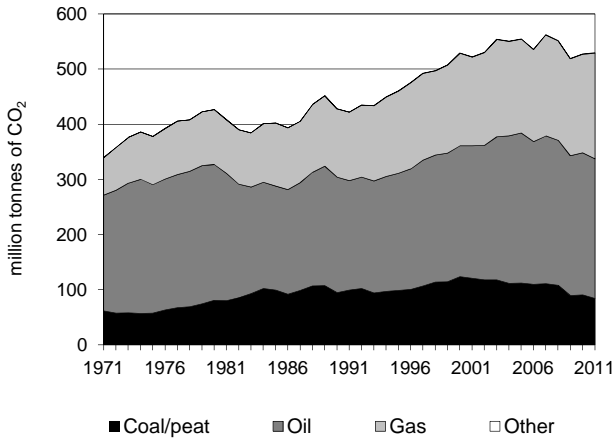


Figure 2. CO₂ emissions by sector

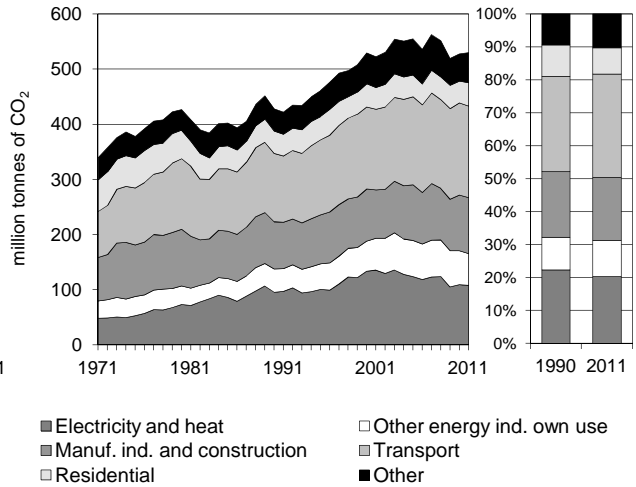


Figure 3. Reference vs Sectoral Approach

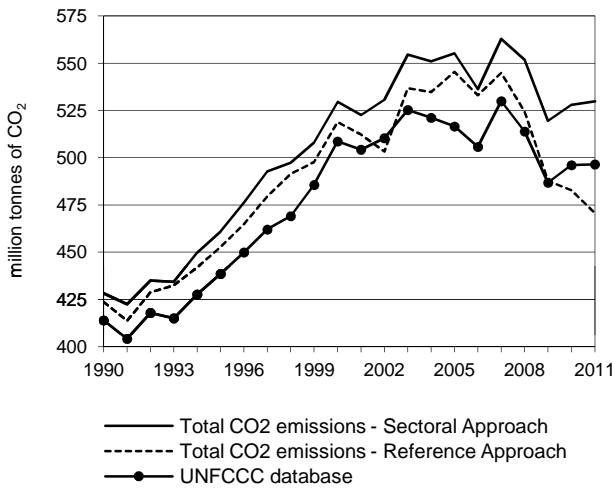


Figure 4. Electricity generation by fuel

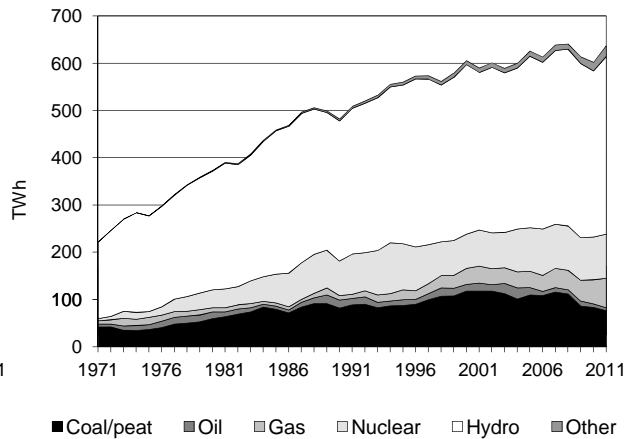


Figure 5. Changes in selected indicators *

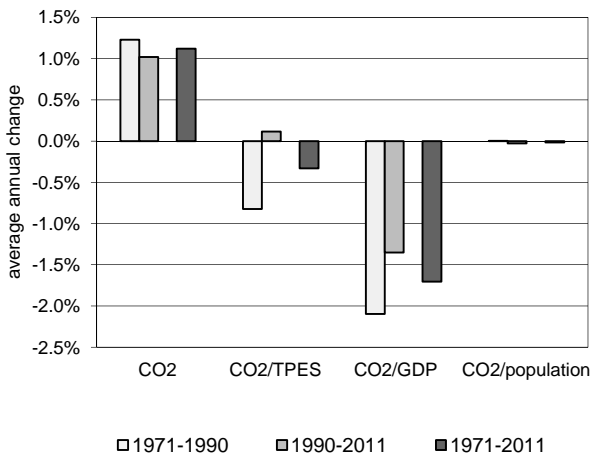
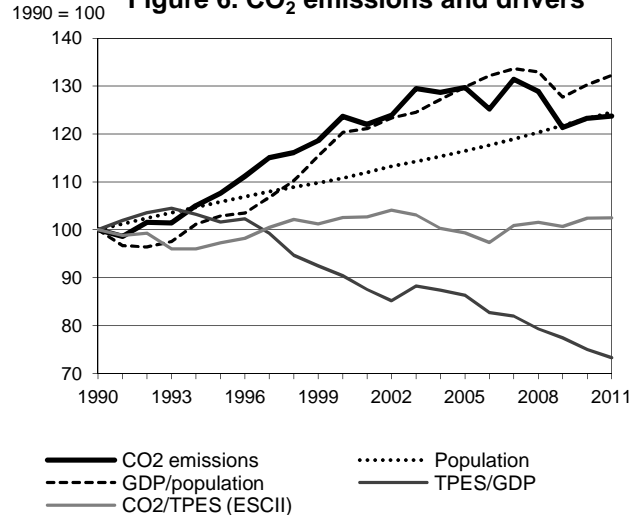


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Canada

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	428.20	460.88	529.54	555.22	519.49	527.95	529.84	23.7%
TPES (PJ)	8 732	9 662	10 528	11 397	10 523	10 509	10 544	20.8%
GDP (billion 2005 USD)	749.89	816.66	999.93	1 133.76	1 166.39	1 203.89	1 234.78	64.7%
GDP PPP (billion 2005 USD)	748.72	815.40	998.38	1 132.00	1 164.58	1 202.02	1 232.87	64.7%
Population (millions)	27.69	29.30	30.69	32.25	33.73	34.13	34.48	24.5%
CO ₂ / TPES (tCO ₂ per TJ)	49.0	47.7	50.3	48.7	49.4	50.2	50.2	2.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.57	0.56	0.53	0.49	0.45	0.44	0.43	-24.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.57	0.57	0.53	0.49	0.45	0.44	0.43	-24.8%
CO ₂ / population (tCO ₂ per capita)	15.46	15.73	17.26	17.22	15.40	15.47	15.37	-0.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	108	124	130	121	123	124	23.7%
Population	100	106	111	116	122	123	125	24.5%
GDP per population (GDP per capita)	100	103	120	130	128	130	132	32.2%
Energy intensity (TPES/GDP)	100	102	90	86	77	75	73	-26.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	97	103	99	101	102	102	2.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	84.16	253.14	191.80	0.73	529.84	23.7%
Main activity producer elec. and heat	70.00	4.99	23.30	-	98.30	6.4%
Unallocated autoproducers	0.00	1.49	7.76	0.20	9.45	198.5%
Other energy industry own use	0.02	25.17	32.69	-	57.87	36.6%
Manufacturing industries and construction	14.00	25.76	61.11	0.53	101.41	18.7%
Transport	-	160.33	5.69	-	166.02	34.1%
<i>of which: road</i>	-	139.20	0.08	-	139.28	45.6%
Other	0.14	35.40	61.25	-	96.79	19.4%
<i>of which: residential</i>	0.14	7.95	34.26	-	42.36	3.8%
Reference Approach	77.02	200.31	192.69	0.73	470.75	11.1%
Diff. due to losses and/or transformation	1.97	- 25.76	6.52	-	- 17.27	
Statistical differences	- 9.11	- 27.07	- 5.63	-	- 41.81	
<i>Memo: international marine bunkers</i>	-	1.68	-	-	1.68	-41.5%
<i>Memo: international aviation bunkers</i>	-	3.60	-	-	3.60	33.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	139.20	45.7%	18.9	18.9
Main activity prod. elec. and heat - coal/peat	70.00	-11.1%	9.5	28.5
Manufacturing industries - gas	61.11	36.8%	8.3	36.8
Residential - gas	34.26	29.1%	4.7	41.4
Other energy industry own use - gas	32.69	57.0%	4.4	45.9
Non-specified other - oil	27.45	39.7%	3.7	49.6
Non-specified other - gas	26.99	31.0%	3.7	53.3
Manufacturing industries - oil	25.76	1.6%	3.5	56.8
Other energy industry own use - oil	25.17	18.9%	3.4	60.2
<i>Memo: total CO₂ from fuel combustion</i>	<i>529.84</i>	<i>23.7%</i>	<i>72.1</i>	<i>72.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Chile

Figure 1. CO₂ emissions by fuel

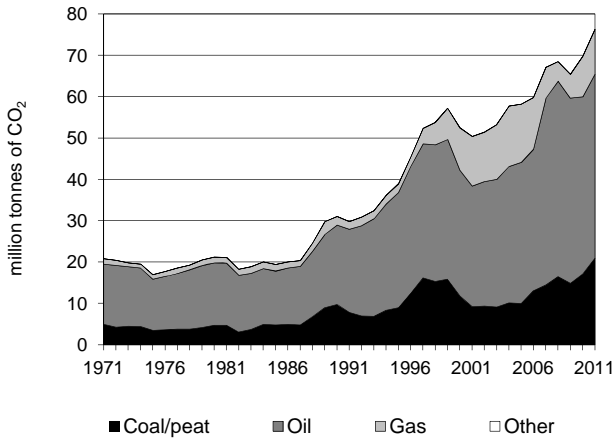


Figure 2. CO₂ emissions by sector

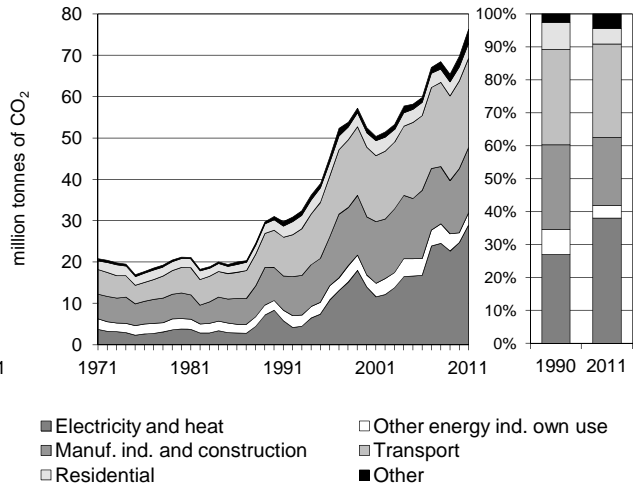


Figure 3. Reference vs Sectoral Approach

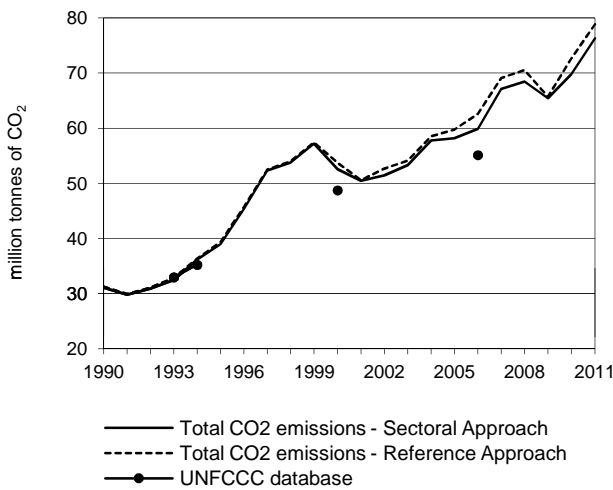


Figure 4. Electricity generation by fuel

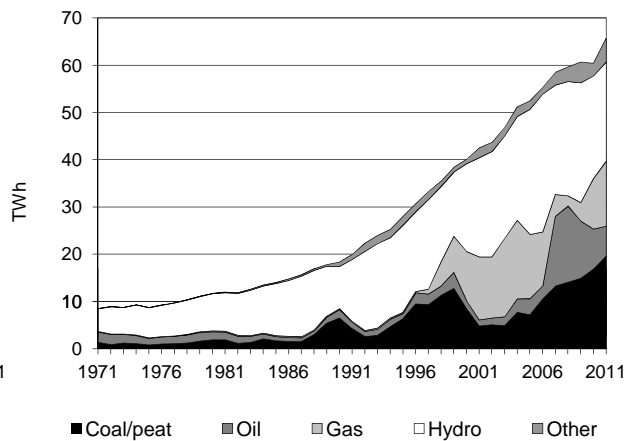


Figure 5. Changes in selected indicators *

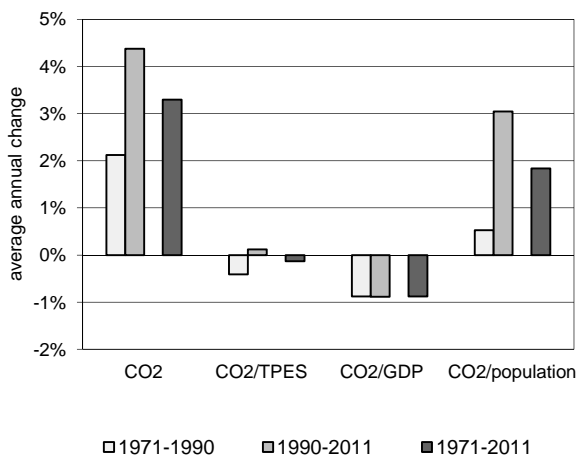
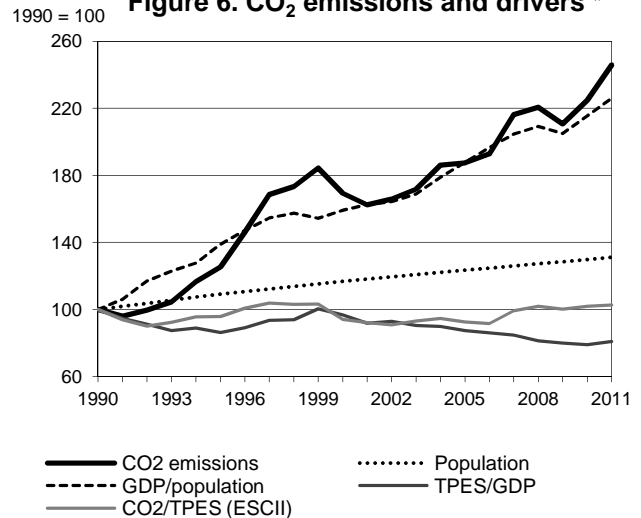


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Chile

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	31.04	38.94	52.52	58.19	65.42	69.78	76.31	145.8%
TPES (PJ)	587	768	1 054	1 187	1 234	1 295	1 406	139.7%
GDP (billion 2005 USD)	53.08	80.51	98.66	123.06	139.81	148.34	157.22	196.2%
GDP PPP (billion 2005 USD)	89.04	135.05	165.51	206.43	234.54	248.84	263.74	196.2%
Population (millions)	13.18	14.40	15.40	16.27	16.93	17.09	17.27	31.0%
CO ₂ / TPES (tCO ₂ per TJ)	52.9	50.7	49.8	49.0	53.0	53.9	54.3	2.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.58	0.48	0.53	0.47	0.47	0.47	0.49	-17.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.35	0.29	0.32	0.28	0.28	0.28	0.29	-17.0%
CO ₂ / population (tCO ₂ per capita)	2.36	2.70	3.41	3.58	3.86	4.08	4.42	87.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	125	169	187	211	225	246	145.8%
Population	100	109	117	123	128	130	131	31.0%
GDP per population (GDP per capita)	100	139	159	188	205	215	226	126.1%
Energy intensity (TPES/GDP)	100	86	97	87	80	79	81	-19.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	96	94	93	100	102	103	2.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	20.95	44.50	10.85	0.01	76.31	145.8%
Main activity producer elec. and heat	18.58	4.39	5.50	-	28.46	416.7%
Unallocated autoproducers	-	0.42	0.13	-	0.54	-81.1%
Other energy industry own use	0.94	0.97	1.00	-	2.91	24.4%
Manufacturing industries and construction	1.38	11.39	3.00	0.01	15.79	98.0%
Transport	-	21.60	0.04	-	21.64	140.7%
<i>of which: road</i>	-	19.54	0.04	-	19.58	152.5%
Other	0.05	5.73	1.19	-	6.96	108.2%
<i>of which: residential</i>	0.02	2.66	0.91	-	3.58	41.2%
Reference Approach	20.68	47.84	10.33	0.01	78.86	152.7%
Diff. due to losses and/or transformation	0.22	5.62	-0.18	-	5.66	
Statistical differences	-0.49	-2.28	-0.34	-	-3.11	
<i>Memo: international marine bunkers</i>	-	1.57	-	-	1.57	174.4%
<i>Memo: international aviation bunkers</i>	-	1.31	-	-	1.31	131.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	19.54	152.5%	18.4	18.4
Main activity prod. elec. and heat - coal/peat	18.58	303.8%	17.5	36.0
Manufacturing industries - oil	11.39	142.1%	10.7	46.7
Main activity prod. elec. and heat - gas	5.50	+	5.2	51.9
Main activity prod. elec. and heat - oil	4.39	437.0%	4.1	56.0
Non-specified other - oil	3.08	430.8%	2.9	58.9
Manufacturing industries - gas	3.00	157.0%	2.8	61.8
Residential - oil	2.66	27.7%	2.5	64.3
Other transport - oil	2.06	66.2%	1.9	66.2
<i>Memo: total CO₂ from fuel combustion</i>	<i>76.31</i>	<i>145.8%</i>	<i>72.0</i>	<i>72.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

People's Republic of China

Figure 1. CO₂ emissions by fuel

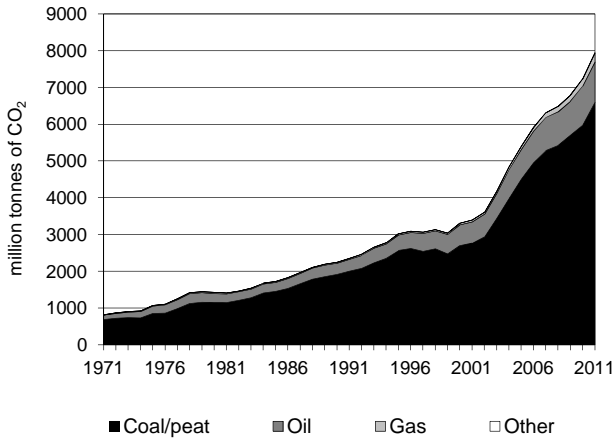


Figure 2. CO₂ emissions by sector

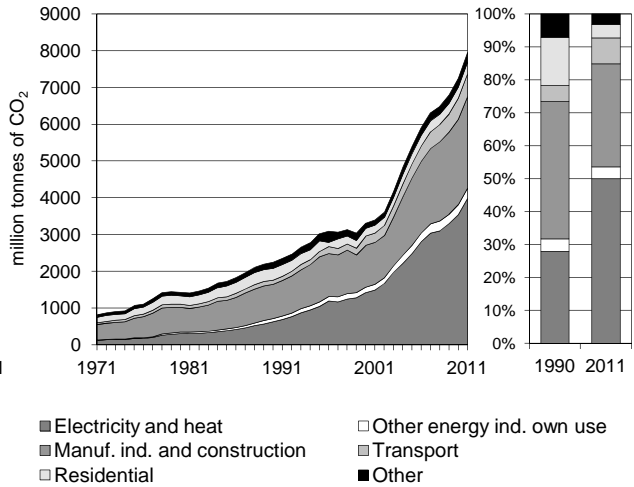


Figure 3. Reference vs Sectoral Approach

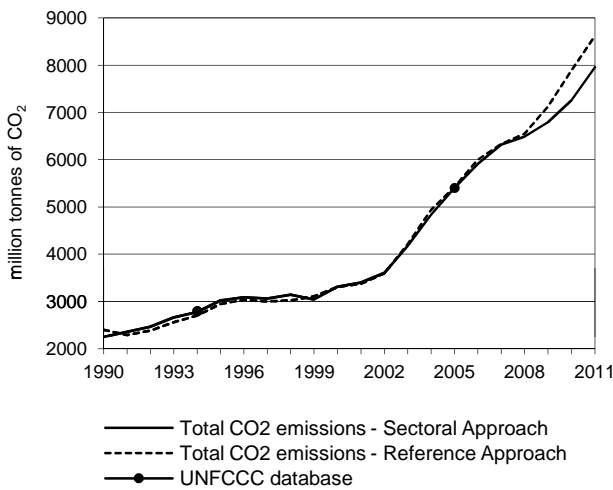


Figure 4. Electricity generation by fuel

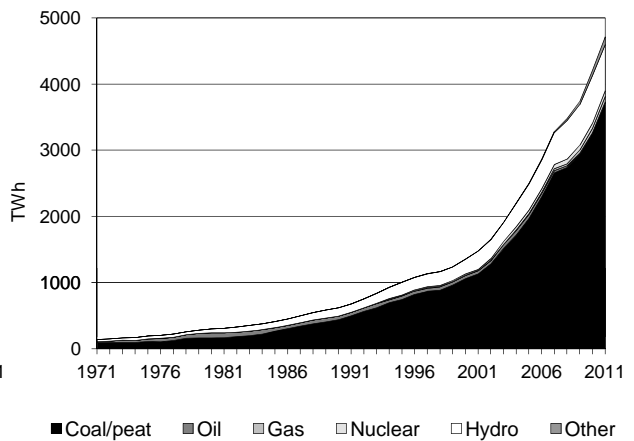


Figure 5. Changes in selected indicators *

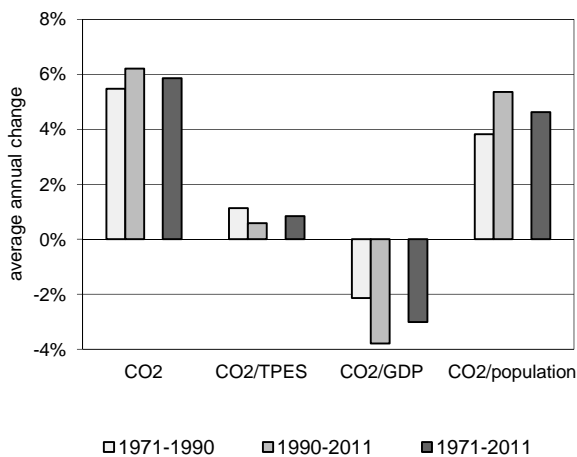
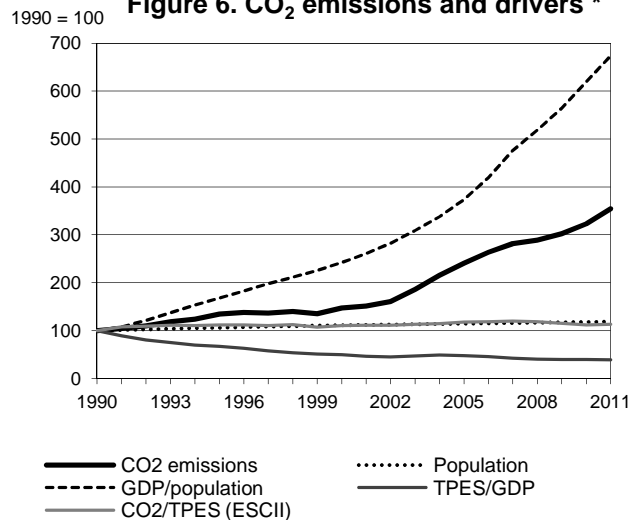


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

People's Republic of China

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2 244.9	3 021.6	3 310.1	5 403.1	6 793.0	7 252.6	7 954.5	254.3%
TPES (PJ)	36 453	43 729	48 624	74 344	95 716	105 371	114 205	213.3%
GDP (billion 2005 USD)	525.7	937.4	1 417.0	2 256.9	3 476.5	3 838.0	4 194.9	698.0%
GDP PPP (billion 2005 USD)	1 249.5	2 228.0	3 368.1	5 364.3	8 262.9	9 122.2	9 970.6	698.0%
Population (millions)	1 135.2	1 204.9	1 262.6	1 303.7	1 331.4	1 337.8	1 344.1	18.4%
CO ₂ / TPES (tCO ₂ per TJ)	61.6	69.1	68.1	72.7	71.0	68.8	69.7	13.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	4.27	3.22	2.34	2.39	1.95	1.89	1.90	-55.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.80	1.36	0.98	1.01	0.82	0.80	0.80	-55.6%
CO ₂ / population (tCO ₂ per capita)	1.98	2.51	2.62	4.14	5.10	5.42	5.92	199.3%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	135	147	241	303	323	354	254.3%
Population	100	106	111	115	117	118	118	18.4%
GDP per population (GDP per capita)	100	168	242	374	564	620	674	573.9%
Energy intensity (TPES/GDP)	100	67	49	48	40	40	39	-60.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	112	111	118	115	112	113	13.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	6 592.8	1 102.9	238.5	20.3	7 954.5	254.3%
Main activity producer elec. and heat	3 841.5	9.5	49.2	-	3 900.2	532.8%
Unallocated autoproducers	52.3	8.2	-	20.3	80.8	640.6%
Other energy industry own use	184.6	69.2	31.3	-	285.1	233.2%
Manufacturing industries and construction	2 191.6	226.3	69.7	-	2 487.5	166.0%
Transport	12.4	588.3	22.7	-	623.3	473.6%
<i>of which: road</i>	-	471.8	22.3	-	494.2	752.8%
Other	310.4	201.6	65.6	-	577.7	18.3%
<i>of which: residential</i>	188.6	79.2	51.7	-	319.5	-2.7%
Reference Approach	7 207.8	1 150.3	242.8	20.5	8 621.3	260.1%
Diff. due to losses and/or transformation	160.5	42.0	4.0	-	206.5	
Statistical differences	454.5	5.3	0.2	0.1	460.2	
<i>Memo: international marine bunkers</i>	-	29.2	-	-	29.2	579.5%
<i>Memo: international aviation bunkers</i>	-	18.4	-	-	18.4	+

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	3 841.5	571.7%	33.2	33.2
Manufacturing industries - coal/peat	2 191.6	161.5%	18.9	52.1
Road - oil	471.8	714.3%	4.1	56.2
Manufacturing industries - oil	226.3	168.9%	2.0	58.2
Residential - coal/peat	188.6	-40.3%	1.6	59.8
Other energy industry - coal/peat	184.6	263.9%	1.6	61.4
Non-specified other - oil	122.5	112.9%	1.1	62.5
Non-specified other sectors - coal/peat	121.8	19.5%	1.1	63.5
Other transport - oil	116.4	828.6%	1.0	64.5
<i>Memo: total CO₂ from fuel combustion</i>	<i>7 954.5</i>	<i>254.3%</i>	<i>68.7</i>	<i>68.7</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Chinese Taipei

Figure 1. CO₂ emissions by fuel

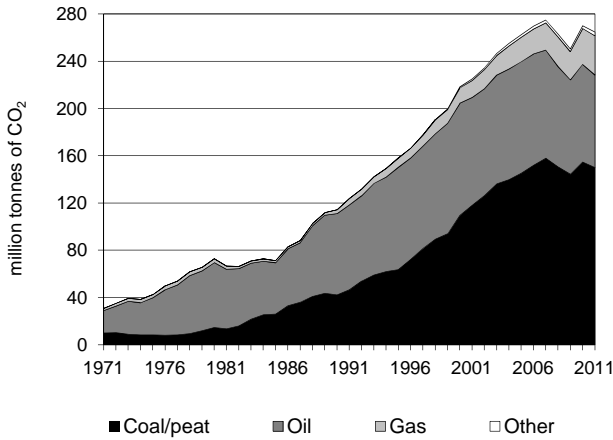


Figure 2. CO₂ emissions by sector

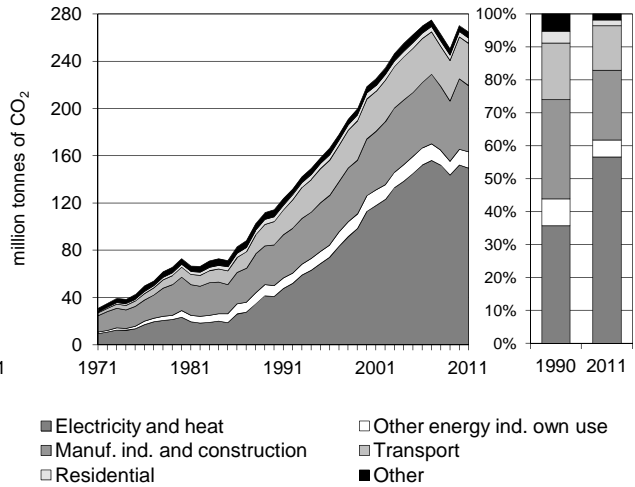


Figure 3. Reference vs Sectoral Approach

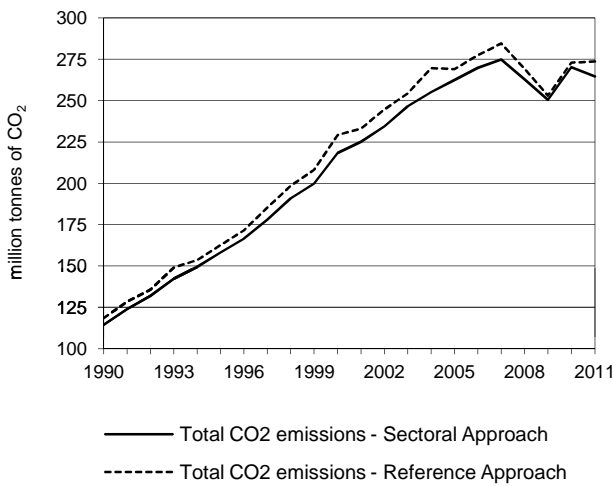


Figure 4. Electricity generation by fuel

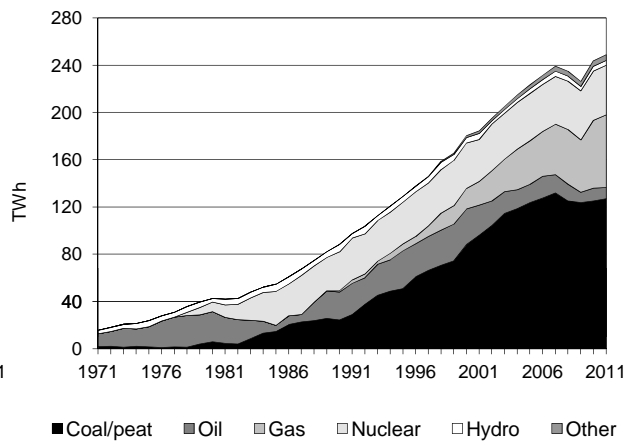


Figure 5. Changes in selected indicators *

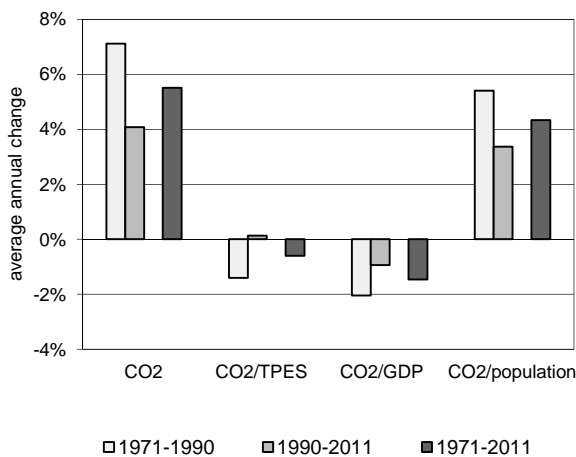
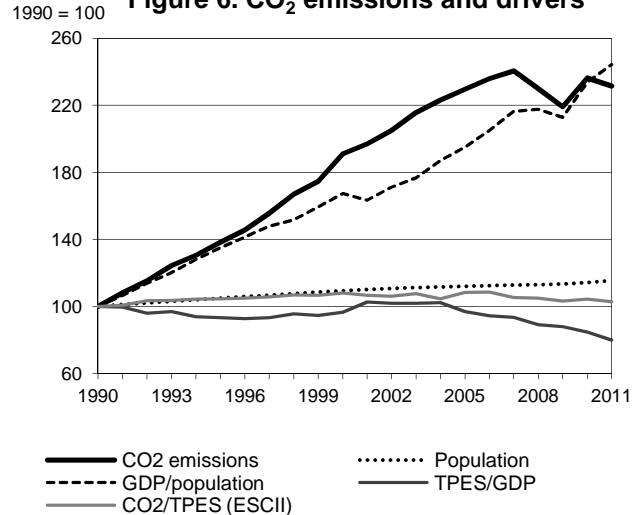


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Chinese Taipei

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	114.36	158.19	218.42	262.54	250.48	270.22	264.66	131.4%
TPES (PJ)	2 020	2 670	3 573	4 278	4 283	4 575	4 546	125.0%
GDP (billion 2005 USD)	167.05	236.79	305.75	364.85	402.77	446.36	470.55	181.7%
GDP PPP (billion 2005 USD)	277.82	393.81	508.50	606.79	669.85	742.35	782.59	181.7%
Population (millions)	20.28	21.29	22.18	22.70	22.97	23.18	23.39	15.4%
CO ₂ / TPES (tCO ₂ per TJ)	56.6	59.2	61.1	61.4	58.5	59.1	58.2	2.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.68	0.67	0.71	0.72	0.62	0.61	0.56	-17.8%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.41	0.40	0.43	0.43	0.37	0.36	0.34	-17.9%
CO ₂ / population (tCO ₂ per capita)	5.64	7.43	9.85	11.57	10.90	11.66	11.31	100.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	138	191	230	219	236	231	131.4%
Population	100	105	109	112	113	114	115	15.4%
GDP per population (GDP per capita)	100	135	167	195	213	234	244	144.2%
Energy intensity (TPES/GDP)	100	93	97	97	88	85	80	-20.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	105	108	108	103	104	103	2.8%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	150.11	78.22	33.28	3.06	264.66	131.4%
Main activity producer elec. and heat	83.53	5.37	25.93	0.03	114.87	220.7%
Unallocated autoproducers	28.93	2.71	0.21	2.98	34.83	585.2%
Other energy industry own use	7.64	4.52	1.60	-	13.76	47.6%
Manufacturing industries and construction	30.01	23.06	2.82	0.05	55.94	62.5%
Transport	-	35.75	-	-	35.75	82.0%
<i>of which: road</i>	-	34.62	-	-	34.62	86.6%
Other	-	6.81	2.71	-	9.51	-5.6%
<i>of which: residential</i>	-	2.87	1.72	-	4.59	12.8%
Reference Approach	158.59	77.33	34.77	3.06	273.74	131.0%
Diff. due to losses and/or transformation	1.44	-1.63	-	-	-0.19	
Statistical differences	7.04	0.73	1.49	-	9.27	
<i>Memo: international marine bunkers</i>	-	5.00	-	-	5.00	2.8%
<i>Memo: international aviation bunkers</i>	-	6.24	-	-	6.24	247.7%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	83.53	322.2%	28.3	28.3
Road - oil	34.62	86.6%	11.7	40.0
Manufacturing industries - coal/peat	30.01	108.6%	10.2	50.1
Unallocated autoproducers - coal/peat	28.93	574.6%	9.8	59.9
Main activity prod. elec. and heat - gas	25.93	+	8.8	68.7
Manufacturing industries - oil	23.06	19.1%	7.8	76.5
Other energy industry - coal/peat	7.64	100.1%	2.6	79.1
Main activity prod. elec. and heat - oil	5.37	-65.3%	1.8	80.9
Other energy industry own use - oil	4.52	-5.4%	1.5	82.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>264.66</i>	<i>131.4%</i>	<i>89.6</i>	<i>89.6</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Colombia

Figure 1. CO₂ emissions by fuel

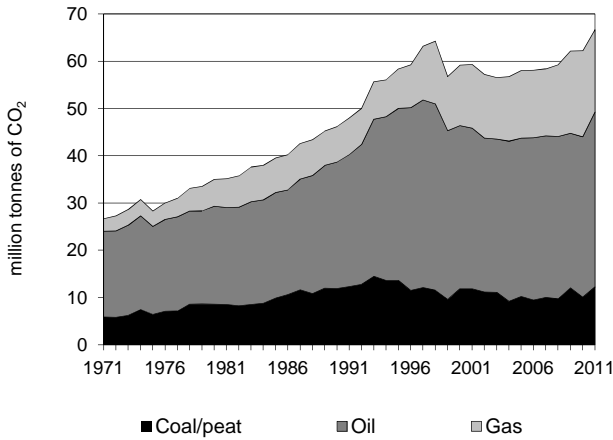


Figure 2. CO₂ emissions by sector

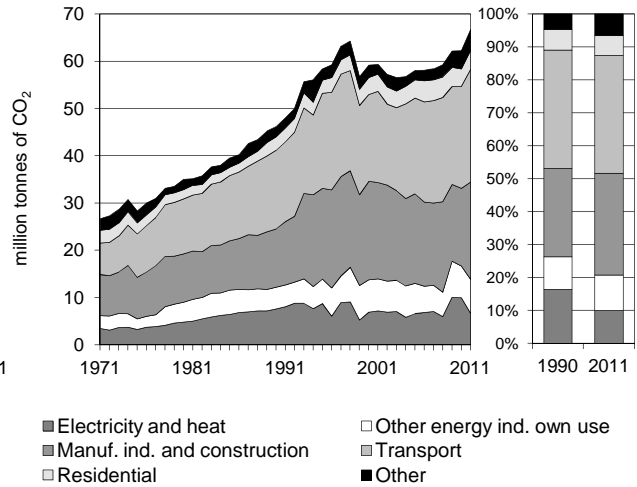


Figure 3. Reference vs Sectoral Approach

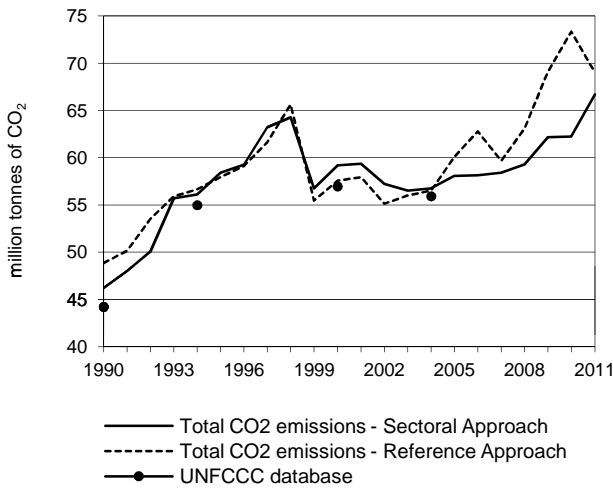


Figure 4. Electricity generation by fuel

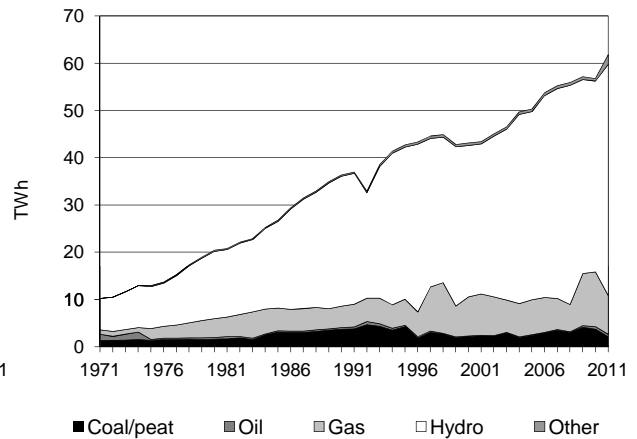


Figure 5. Changes in selected indicators *

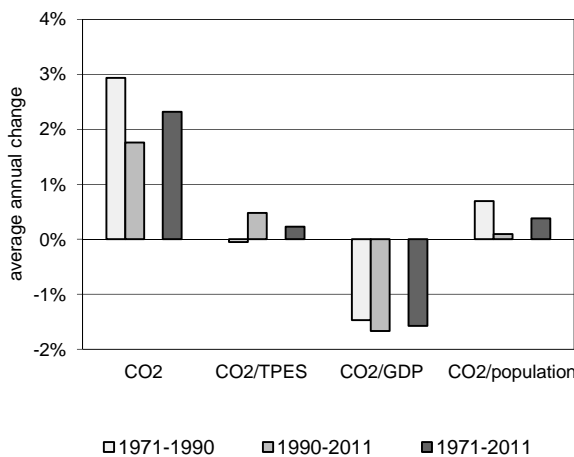
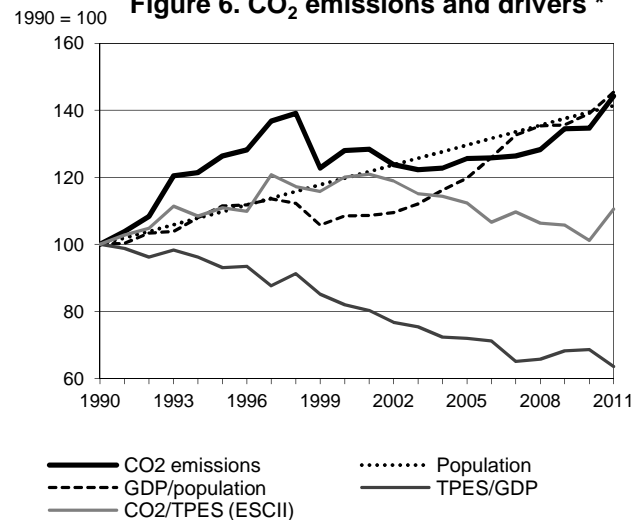


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Colombia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	46.23	58.41	59.18	58.05	62.17	62.24	66.69	44.3%
TPES (PJ)	1 014	1 156	1 081	1 134	1 290	1 350	1 324	30.5%
GDP (billion 2005 USD)	94.34	115.51	122.66	146.52	175.91	182.95	193.77	105.4%
GDP PPP (billion 2005 USD)	202.43	247.85	263.19	314.39	377.45	392.55	415.77	105.4%
Population (millions)	33.20	36.45	39.76	43.04	45.65	46.30	46.93	41.3%
CO ₂ / TPES (tCO ₂ per TJ)	45.6	50.5	54.8	51.2	48.2	46.1	50.4	10.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.49	0.51	0.48	0.40	0.35	0.34	0.34	-29.8%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.23	0.24	0.22	0.18	0.16	0.16	0.16	-29.8%
CO ₂ / population (tCO ₂ per capita)	1.39	1.60	1.49	1.35	1.36	1.34	1.42	2.1%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	126	128	126	134	135	144	44.3%
Population	100	110	120	130	137	139	141	41.3%
GDP per population (GDP per capita)	100	112	109	120	136	139	145	45.3%
Energy intensity (TPES/GDP)	100	93	82	72	68	69	64	-36.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	111	120	112	106	101	111	10.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	12.26	37.04	17.40	-	66.69	44.3%
Main activity producer elec. and heat	1.64	0.45	3.83	-	5.92	1.7%
Unallocated autoproducers	0.76	-	-	-	0.76	-56.8%
Other energy industry own use	0.06	2.33	4.81	-	7.20	56.7%
Manufacturing industries and construction	9.52	6.30	4.75	-	20.57	66.2%
Transport	-	22.71	1.12	-	23.83	43.4%
<i>of which: road</i>	-	21.71	1.12	-	22.83	45.8%
Other	0.28	5.24	2.89	-	8.41	66.0%
<i>of which: residential</i>	0.28	1.58	2.15	-	4.01	40.3%
Reference Approach	12.88	38.39	17.73	-	69.01	41.2%
Diff. due to losses and/or transformation	0.73	2.35	-	-	3.09	
Statistical differences	-0.11	-0.99	0.33	-	-0.77	
<i>Memo: international marine bunkers</i>	-	2.07	-	-	2.07	529.9%
<i>Memo: international aviation bunkers</i>	-	2.24	-	-	2.24	43.5%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	21.71	38.7%	12.9	12.9
Manufacturing industries - coal/peat	9.52	63.5%	5.7	18.6
Manufacturing industries - oil	6.30	34.2%	3.8	22.3
Other energy industry own use - gas	4.81	94.1%	2.9	25.2
Manufacturing industries - gas	4.75	155.9%	2.8	28.0
Main activity prod. elec. and heat - gas	3.83	32.0%	2.3	30.3
Non-specified other - oil	3.66	68.6%	2.2	32.5
Other energy industry own use - oil	2.33	186.5%	1.4	33.9
Residential - gas	2.15	910.6%	1.3	35.1
<i>Memo: total CO₂ from fuel combustion</i>	<i>66.69</i>	<i>44.3%</i>	<i>39.7</i>	<i>39.7</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Congo

Figure 1. CO₂ emissions by fuel

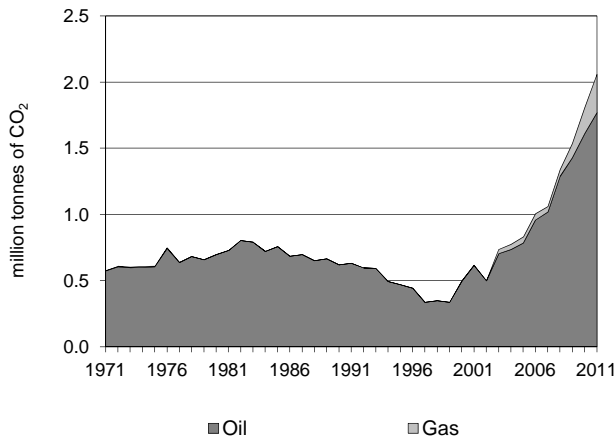


Figure 2. CO₂ emissions by sector

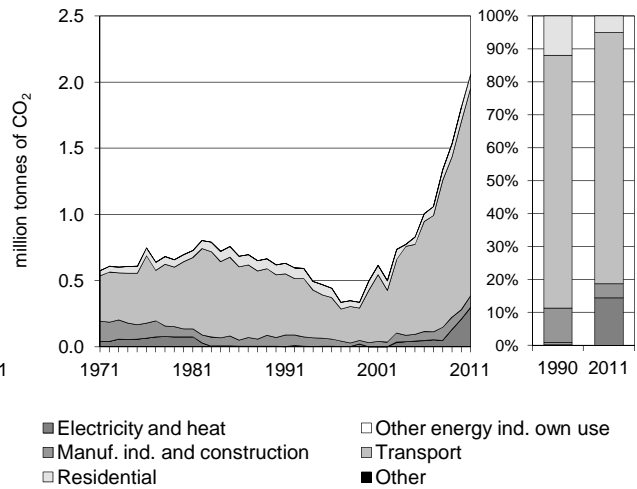


Figure 3. Reference vs Sectoral Approach

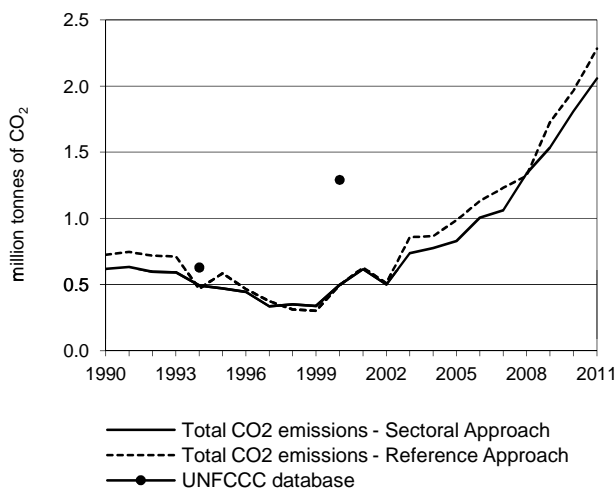


Figure 4. Electricity generation by fuel

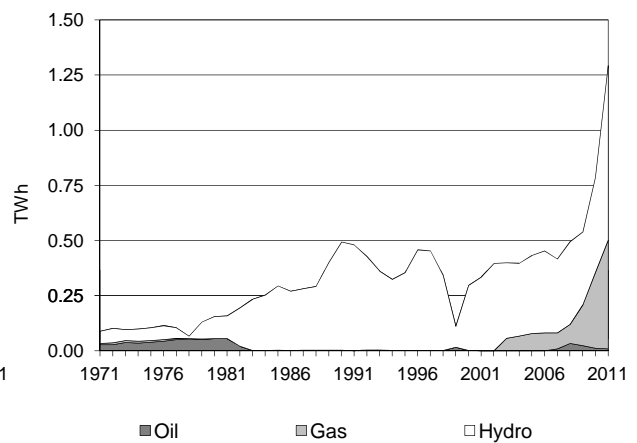


Figure 5. Changes in selected indicators *

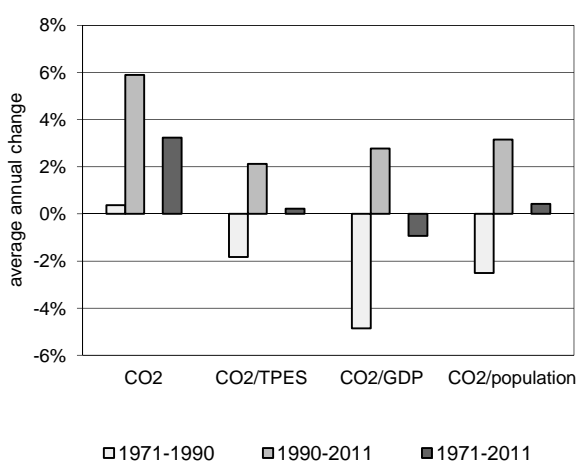
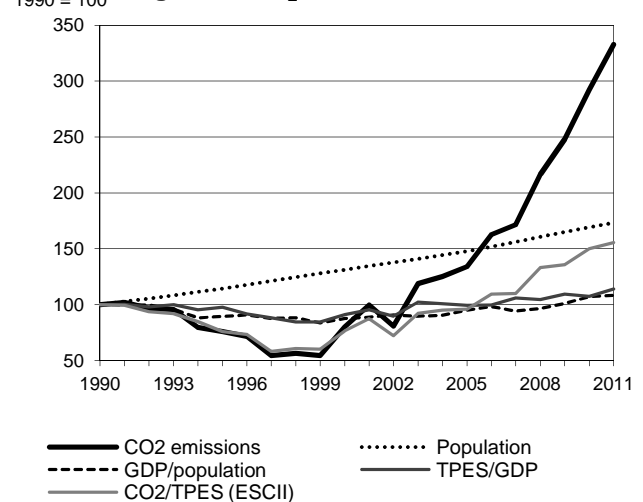


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Congo

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	0.62	0.47	0.50	0.83	1.53	1.81	2.06	232.7%
TPES (PJ)	32	32	34	45	59	63	69	113.9%
GDP (billion 2005 USD)	4.33	4.42	4.99	6.09	7.22	7.85	8.12	87.6%
GDP PPP (billion 2005 USD)	8.50	8.69	9.79	11.95	14.17	15.41	15.94	87.6%
Population (millions)	2.39	2.73	3.14	3.53	3.94	4.04	4.14	73.3%
CO ₂ / TPES (tCO ₂ per TJ)	19.1	14.5	14.6	18.3	25.9	28.6	29.6	55.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.14	0.11	0.10	0.14	0.21	0.23	0.25	77.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.07	0.05	0.05	0.07	0.11	0.12	0.13	77.5%
CO ₂ / population (tCO ₂ per capita)	0.26	0.17	0.16	0.23	0.39	0.45	0.50	92.0%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	76	80	134	248	292	333	232.7%
Population	100	114	131	148	165	169	173	73.3%
GDP per population (GDP per capita)	100	89	88	95	101	107	108	8.2%
Energy intensity (TPES/GDP)	100	98	91	99	109	107	114	14.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	76	76	96	136	150	156	55.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	1.77	0.29	-	2.06	232.7%
Main activity producer elec. and heat	-	0.01	0.29	-	0.30	+
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	-	-	-	-	-100.0%
Manufacturing industries and construction	-	0.09	-	-	0.09	38.5%
Transport	-	1.57	-	-	1.57	230.6%
<i>of which: road</i>	-	1.52	-	-	1.52	236.9%
Other	-	0.10	-	-	0.10	40.5%
<i>of which: residential</i>	-	0.10	-	-	0.10	40.5%
Reference Approach	-	2.00	0.29	-	2.28	215.6%
Diff. due to losses and/or transformation	-	0.08	-	-	0.08	
Statistical differences	-	0.14	-	-	0.14	
<i>Memo: international marine bunkers</i>	-	..	-	-
<i>Memo: international aviation bunkers</i>	-	0.18	-	-	0.18	133.3%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	1.52	236.9%	9.7	9.7
Main activity prod. elec. and heat - gas	0.29	x	1.8	11.6
Residential - oil	0.10	40.5%	0.7	12.2
Manufacturing industries - oil	0.09	38.5%	0.6	12.8
Other transport - oil	0.04	100.8%	0.3	13.1
Main activity prod. elec. and heat - oil	0.01	200.1%	0.1	13.1
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>2.06</i>	<i>232.7%</i>	<i>13.1</i>	<i>13.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Democratic Republic of Congo

Figure 1. CO₂ emissions by fuel

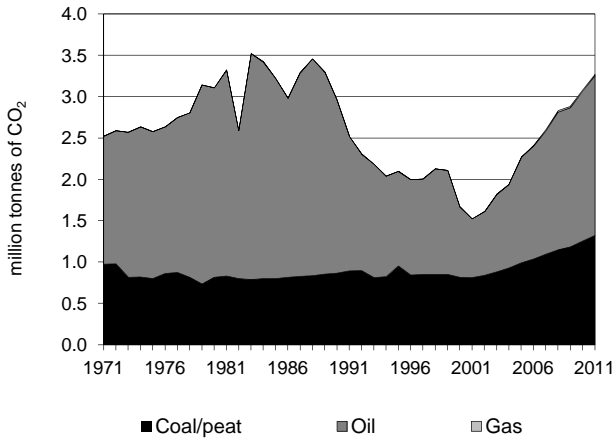


Figure 2. CO₂ emissions by sector

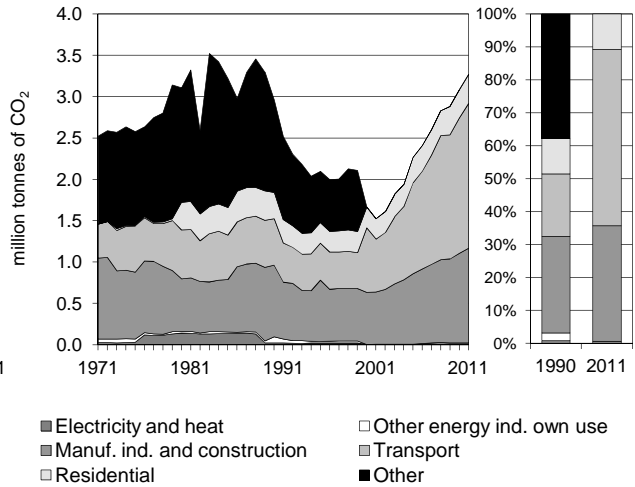


Figure 3. Reference vs Sectoral Approach

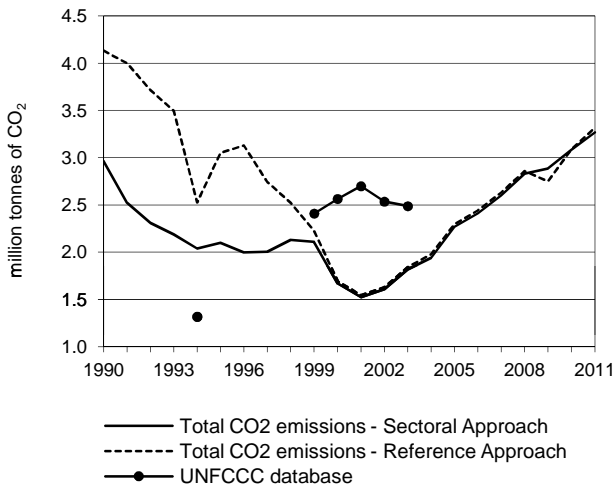


Figure 4. Electricity generation by fuel

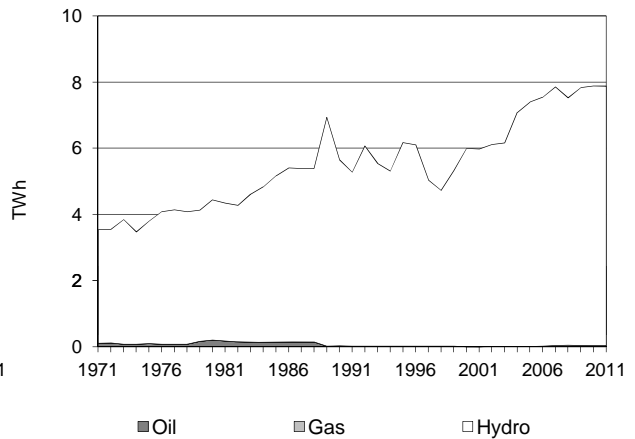


Figure 5. Changes in selected indicators *

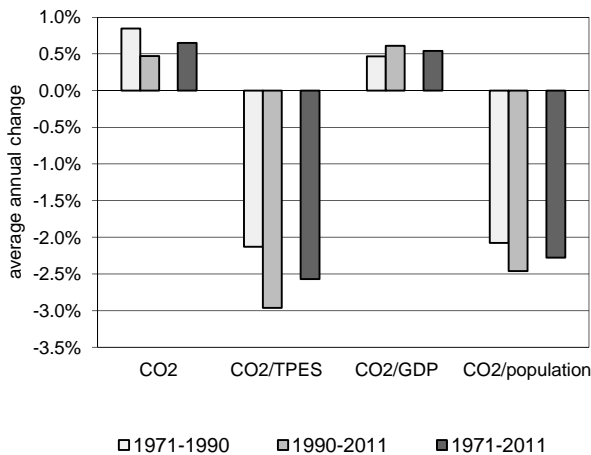
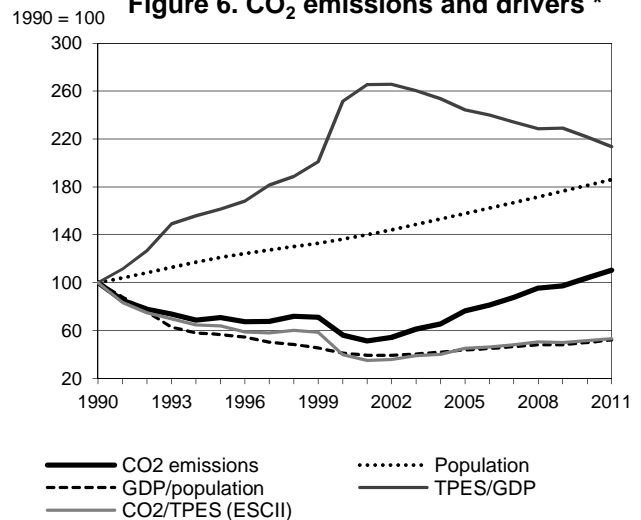


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Democratic Republic of Congo

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2.96	2.10	1.67	2.27	2.88	3.08	3.27	10.4%
TPES (PJ)	494	548	698	836	960	995	1 026	107.6%
GDP (billion 2005 USD)	10.39	7.13	5.84	7.19	8.81	9.44	10.09	-2.9%
GDP PPP (billion 2005 USD)	22.97	15.77	12.91	15.91	19.48	20.88	22.31	-2.9%
Population (millions)	36.41	44.07	49.63	57.42	64.20	65.97	67.76	86.1%
CO ₂ / TPES (tCO ₂ per TJ)	6.0	3.8	2.4	2.7	3.0	3.1	3.2	-46.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.29	0.29	0.29	0.32	0.33	0.33	0.32	13.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.13	0.13	0.13	0.14	0.15	0.15	0.15	13.7%
CO ₂ / population (tCO ₂ per capita)	0.08	0.05	0.03	0.04	0.04	0.05	0.05	-40.7%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	71	56	77	97	104	110	10.4%
Population	100	121	136	158	176	181	186	86.1%
GDP per population (GDP per capita)	100	57	41	44	48	50	52	-47.8%
Energy intensity (TPES/GDP)	100	162	251	244	229	222	214	113.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	64	40	45	50	52	53	-46.8%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	1.32	1.93	0.02	-	3.27	10.4%
Main activity producer elec. and heat	-	0.01	-	-	0.01	-74.9%
Unallocated autoproducers	-	-	0.02	-	0.02	x
Other energy industry own use	-	-	-	-	-	-100.0%
Manufacturing industries and construction	1.00	0.14	-	-	1.15	32.0%
Transport	-	1.75	-	-	1.75	211.7%
<i>of which: road</i>	-	1.75	-	-	1.75	211.7%
Other	0.32	0.03	-	-	0.35	-75.6%
<i>of which: residential</i>	0.32	0.03	-	-	0.35	10.3%
Reference Approach	1.37	1.93	0.02	-	3.32	-19.7%
Diff. due to losses and/or transformation	0.05	-	-	-	0.05	
Statistical differences	- 0.01	0.00	-	-	- 0.01	
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.50	-	-	0.50	54.3%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	1.75	211.7%	1.2	1.2
Manufacturing industries - coal/peat	1.00	52.5%	0.7	1.9
Residential - coal/peat	0.32	53.8%	0.2	2.1
Manufacturing industries - oil	0.14	-31.6%	0.1	2.2
Residential - oil	0.03	-74.1%	0.0	2.2
Unallocated autoproducers - gas	0.02	x	0.0	2.2
Main activity prod. elec. and heat - oil	0.01	-74.9%	0.0	2.2
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>3.27</i>	<i>10.4%</i>	<i>2.2</i>	<i>2.2</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Costa Rica

Figure 1. CO₂ emissions by fuel

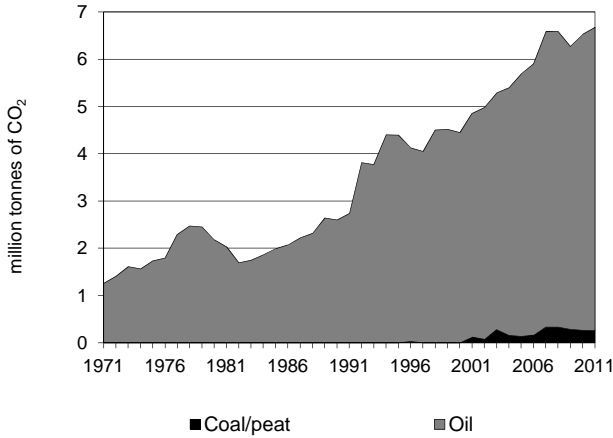


Figure 2. CO₂ emissions by sector

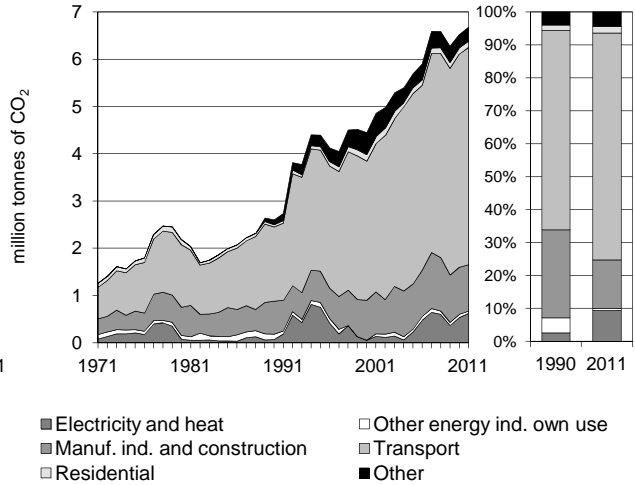


Figure 3. Reference vs Sectoral Approach

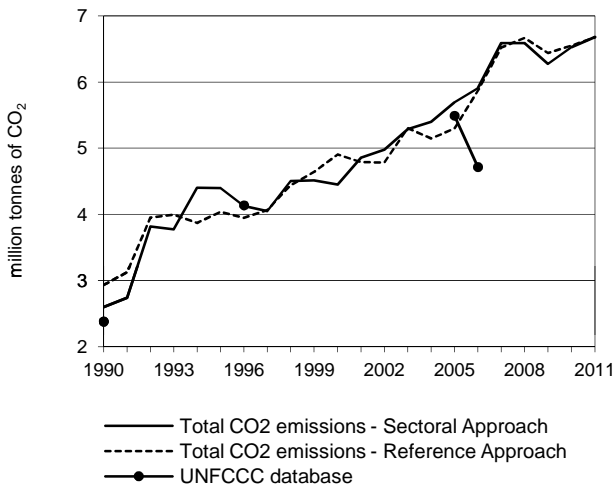


Figure 4. Electricity generation by fuel

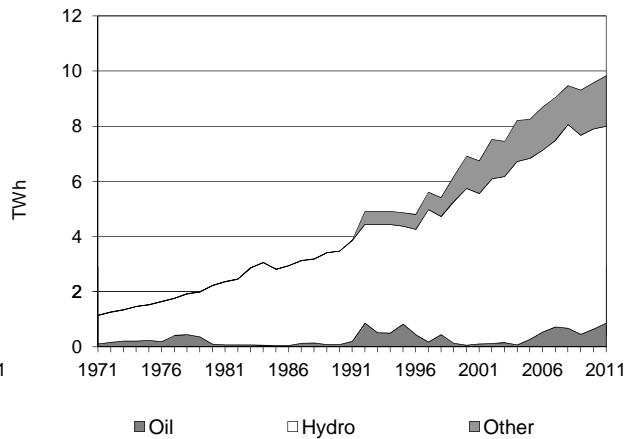


Figure 5. Changes in selected indicators *

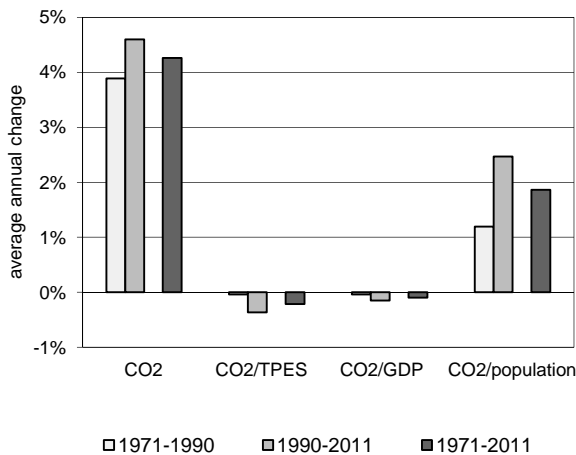
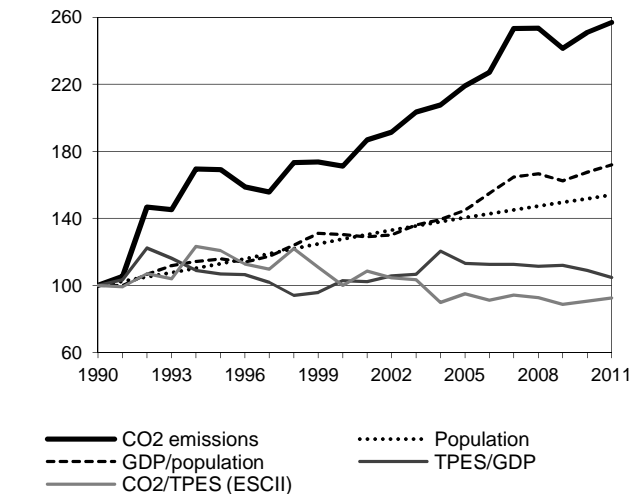


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Costa Rica

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2.60	4.40	4.45	5.69	6.28	6.53	6.68	156.9%
TPES (PJ)	70	98	120	162	191	195	195	177.5%
GDP (billion 2005 USD)	9.82	12.85	16.34	19.97	23.84	24.95	26.00	164.9%
GDP PPP (billion 2005 USD)	19.16	25.07	31.89	38.96	46.52	48.70	50.74	164.9%
Population (millions)	3.07	3.47	3.92	4.31	4.59	4.66	4.73	54.0%
CO ₂ / TPES (tCO ₂ per TJ)	37.0	44.7	37.0	35.2	32.9	33.6	34.3	-7.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.26	0.34	0.27	0.29	0.26	0.26	0.26	-3.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.14	0.18	0.14	0.15	0.13	0.13	0.13	-3.0%
CO ₂ / population (tCO ₂ per capita)	0.85	1.27	1.14	1.32	1.37	1.40	1.41	66.8%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	169	171	219	241	251	257	156.9%
Population	100	113	128	140	150	152	154	54.0%
GDP per population (GDP per capita)	100	116	130	145	162	168	172	72.0%
Energy intensity (TPES/GDP)	100	107	103	113	112	109	105	4.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	121	100	95	89	91	93	-7.4%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.26	6.42	-	-	6.68	156.9%
Main activity producer elec. and heat	-	0.63	-	-	0.63	+
Unallocated autoproducers	..	..	..	..	..	..
Other energy industry own use	-	0.04	-	-	0.04	-63.2%
Manufacturing industries and construction	0.26	0.73	-	-	0.99	41.9%
Transport	-	4.60	-	-	4.60	192.6%
<i>of which: road</i>	-	4.57	-	-	4.57	670.6%
Other	-	0.43	-	-	0.43	189.4%
<i>of which: residential</i>	-	0.14	-	-	0.14	205.5%
Reference Approach	0.28	6.40	-	-	6.68	127.8%
Diff. due to losses and/or transformation	0.02	-0.01	-	-	0.01	
Statistical differences	-	-0.01	-	-	-0.01	
<i>Memo: international marine bunkers</i>	-	0.08	-	-	0.08	-66.7%
<i>Memo: international aviation bunkers</i>	-	0.51	-	-	0.51	+

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	4.57	670.6%	40.4	40.4
Manufacturing industries - oil	0.73	4.8%	6.4	46.8
Main activity prod. elec. and heat - oil	0.63	+	5.5	52.4
Non-specified other - oil	0.29	182.4%	2.6	55.0
Manufacturing industries - coal/peat	0.26	x	2.3	57.2
Residential - oil	0.14	205.5%	1.2	58.4
Other energy industry own use - oil	0.04	-63.2%	0.4	58.8
Other transport - oil	0.03	-97.4%	0.2	59.0
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>6.68</i>	<i>156.9%</i>	<i>59.0</i>	<i>59.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Côte d'Ivoire

Figure 1. CO₂ emissions by fuel

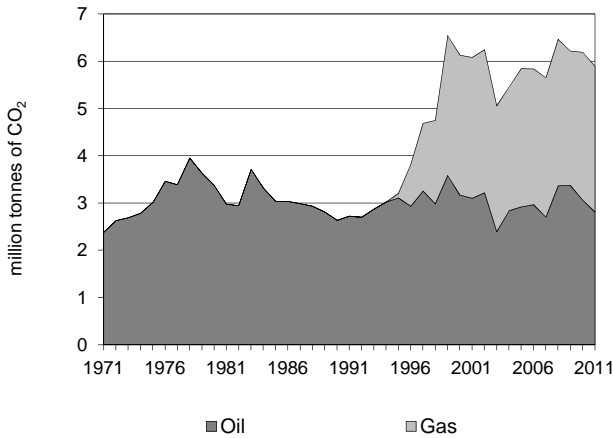


Figure 2. CO₂ emissions by sector

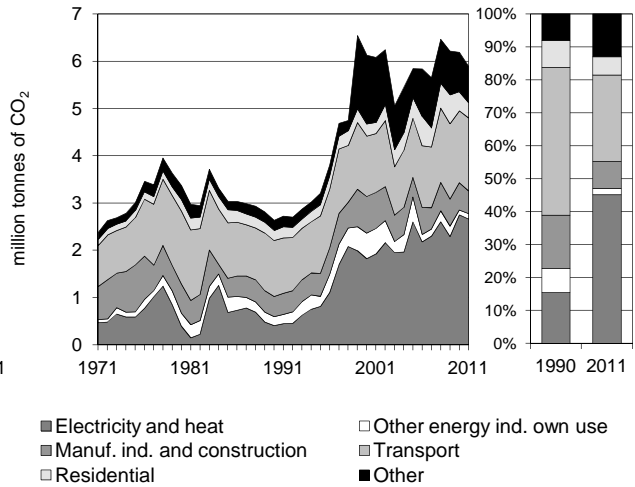


Figure 3. Reference vs Sectoral Approach

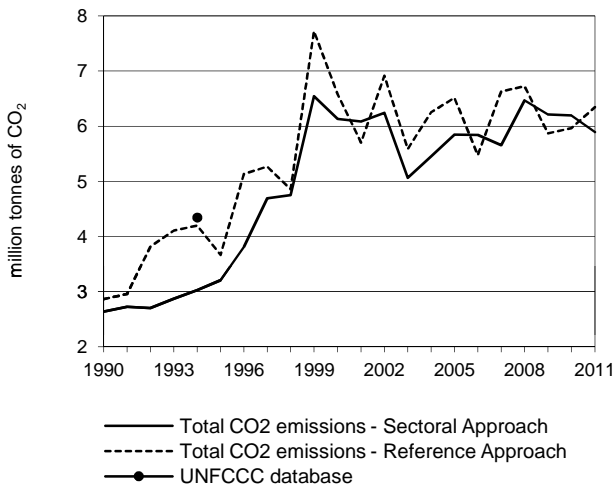


Figure 4. Electricity generation by fuel

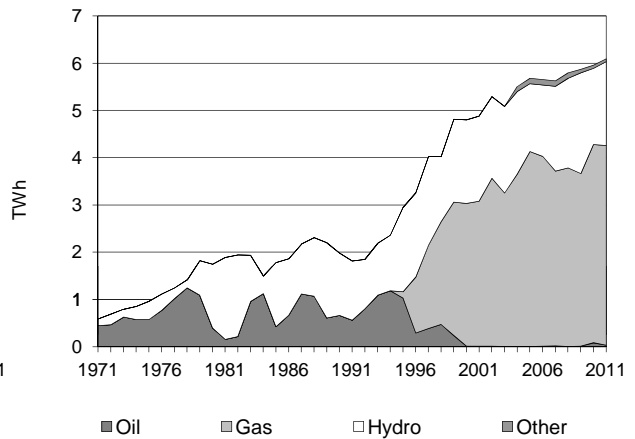


Figure 5. Changes in selected indicators *

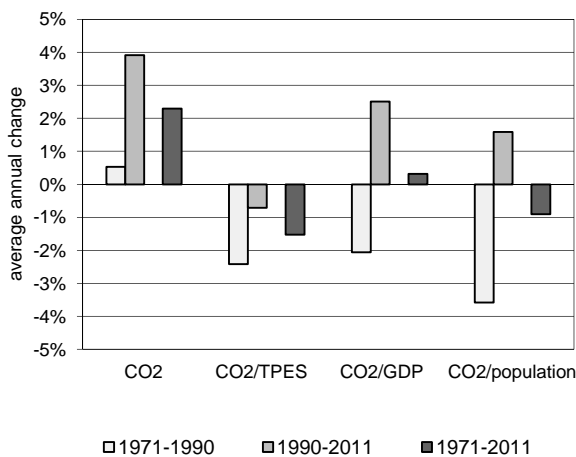
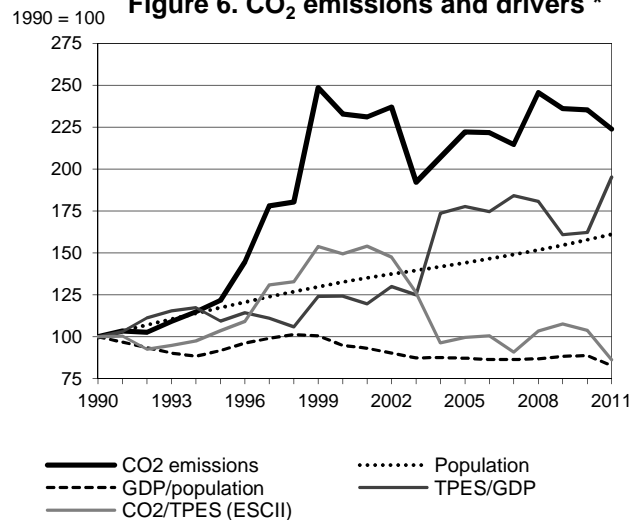


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Côte d'Ivoire

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2.63	3.21	6.13	5.85	6.22	6.19	5.89	123.8%
TPES (PJ)	181	213	282	403	397	410	470	159.8%
GDP (billion 2005 USD)	13.04	14.02	16.36	16.36	17.79	18.22	17.36	33.1%
GDP PPP (billion 2005 USD)	23.92	25.73	30.02	30.02	32.64	33.43	31.84	33.2%
Population (millions)	12.52	14.68	16.58	18.02	19.35	19.74	20.15	61.0%
CO ₂ / TPES (tCO ₂ per TJ)	14.6	15.1	21.7	14.5	15.6	15.1	12.5	-13.9%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.20	0.23	0.37	0.36	0.35	0.34	0.34	68.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.11	0.12	0.20	0.19	0.19	0.19	0.19	68.1%
CO ₂ / population (tCO ₂ per capita)	0.21	0.22	0.37	0.32	0.32	0.31	0.29	39.0%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	122	233	222	236	235	224	123.8%
Population	100	117	132	144	155	158	161	61.0%
GDP per population (GDP per capita)	100	92	95	87	88	89	83	-17.3%
Energy intensity (TPES/GDP)	100	109	124	178	161	162	195	95.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	103	149	100	108	104	86	-13.9%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	2.81	3.08	-	5.89	123.8%
Main activity producer elec. and heat	-	0.03	2.63	-	2.66	564.0%
Unallocated autoproducers	-	-	0.00	-	0.00	-86.6%
Other energy industry own use	-	0.09	0.03	-	0.11	-41.6%
Manufacturing industries and construction	-	0.48	-	-	0.48	13.1%
Transport	-	1.54	-	-	1.54	31.0%
<i>of which: road</i>	-	1.29	-	-	1.29	26.1%
Other	-	0.67	0.42	-	1.09	154.8%
<i>of which: residential</i>	-	0.33	-	-	0.33	51.0%
Reference Approach	-	3.29	3.06	-	6.35	121.7%
Diff. due to losses and/or transformation	-	0.51	-	-	0.51	
Statistical differences	-	-0.04	-0.03	-	-0.06	
<i>Memo: international marine bunkers</i>	-	0.04	-	-	0.04	-69.3%
<i>Memo: international aviation bunkers</i>	-	0.14	-	-	0.14	-46.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - gas	2.63	x	8.1	8.1
Road - oil	1.29	26.1%	4.0	12.1
Manufacturing industries - oil	0.48	13.1%	1.5	13.6
Non-specified other - gas	0.42	x	1.3	14.9
Non-specified other - oil	0.34	61.3%	1.1	15.9
Residential - oil	0.33	51.0%	1.0	16.9
Other transport - oil	0.25	63.3%	0.8	17.7
Other energy industry own use - oil	0.09	-55.7%	0.3	18.0
Main activity prod. elec. and heat - oil	0.03	-92.3%	0.1	18.1
<i>Memo: total CO₂ from fuel combustion</i>	<i>5.89</i>	<i>123.8%</i>	<i>18.1</i>	<i>18.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Croatia

Figure 1. CO₂ emissions by fuel

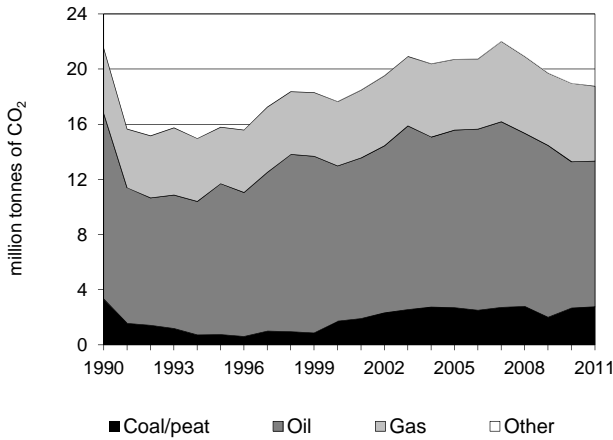


Figure 2. CO₂ emissions by sector

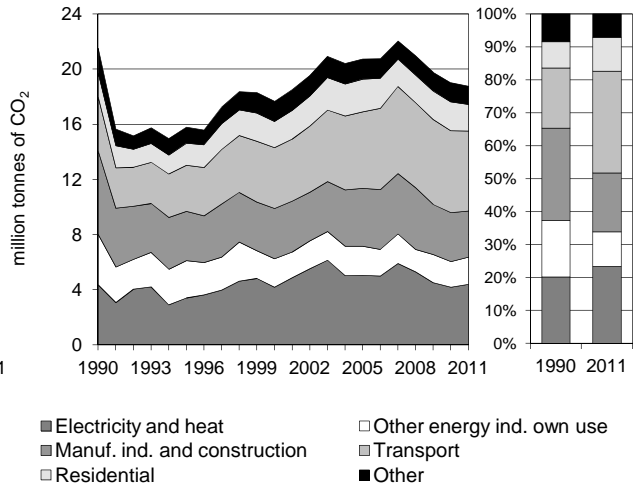


Figure 3. Reference vs Sectoral Approach

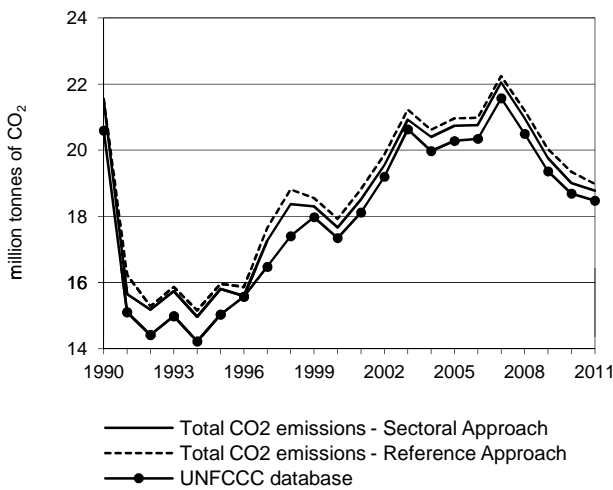


Figure 4. Electricity generation by fuel

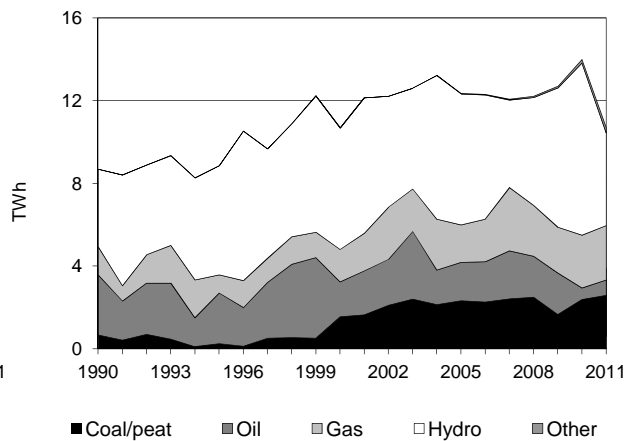


Figure 5. Changes in selected indicators *

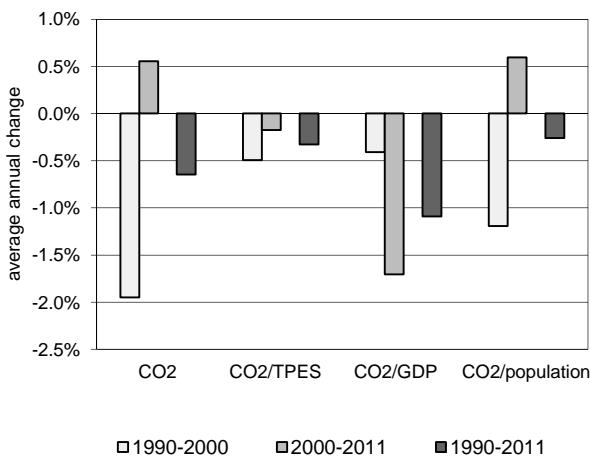
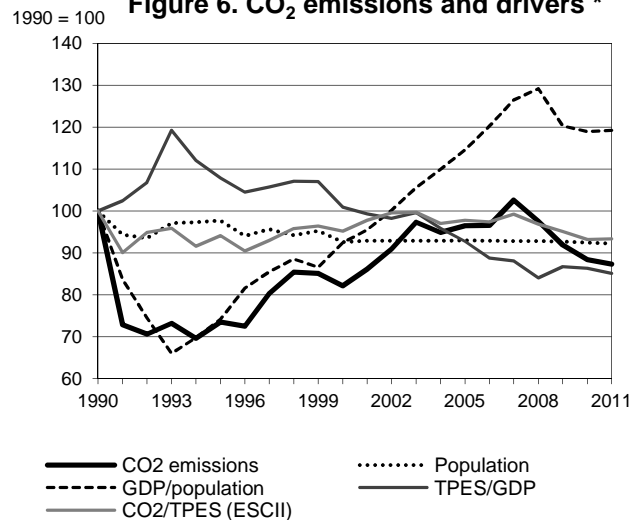


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Croatia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	21.51	15.80	17.66	20.74	19.76	19.01	18.77	-12.7%
TPES (PJ)	378	295	326	373	365	359	353	-6.5%
GDP (billion 2005 USD)	42.11	30.50	36.03	44.82	46.94	46.28	46.27	9.9%
GDP PPP (billion 2005 USD)	63.99	46.34	54.75	68.10	71.32	70.32	70.31	9.9%
Population (millions)	4.78	4.67	4.43	4.44	4.43	4.42	4.41	-7.8%
CO ₂ / TPES (tCO ₂ per TJ)	56.9	53.5	54.2	55.6	54.1	53.0	53.1	-6.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.51	0.52	0.49	0.46	0.42	0.41	0.41	-20.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.34	0.34	0.32	0.30	0.28	0.27	0.27	-20.6%
CO ₂ / population (tCO ₂ per capita)	4.50	3.38	3.99	4.67	4.46	4.30	4.26	-5.3%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	73	82	96	92	88	87	-12.7%
Population	100	98	93	93	93	92	92	-7.8%
GDP per population (GDP per capita)	100	74	92	115	120	119	119	19.2%
Energy intensity (TPES/GDP)	100	108	101	93	87	86	85	-14.9%
Carbon intensity: ESCII (CO ₂ /TPES)	100	94	95	98	95	93	93	-6.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	2.75	10.58	5.42	0.02	18.77	-12.7%
Main activity producer elec. and heat	2.15	0.55	1.43	-	4.13	5.4%
Unallocated autoproducers	0.02	0.11	0.14	-	0.26	-37.1%
Other energy industry own use	-	1.53	0.44	-	1.97	-46.4%
Manufacturing industries and construction	0.55	1.00	1.77	0.02	3.35	-44.7%
Transport	-	5.81	0.00	-	5.81	48.3%
<i>of which: road</i>	-	5.40	0.00	-	5.40	71.6%
Other	0.03	1.58	1.64	-	3.26	-7.9%
<i>of which: residential</i>	0.02	0.63	1.27	-	1.93	12.0%
Reference Approach	2.75	10.52	5.69	0.02	18.98	-11.9%
Diff. due to losses and/or transformation	-0.01	-0.03	0.27	-	0.23	
Statistical differences	-0.00	-0.03	-	-	-0.03	
<i>Memo: international marine bunkers</i>	-	0.07	-	-	0.07	-49.3%
<i>Memo: international aviation bunkers</i>	-	0.16	-	-	0.16	10.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	5.40	71.5%	18.9	18.9
Main activity prod. elec. and heat - coal/peat	2.15	252.1%	7.5	26.4
Manufacturing industries - gas	1.77	-13.0%	6.2	32.6
Other energy industry own use - oil	1.53	-38.3%	5.4	38.0
Main activity prod. elec. and heat - gas	1.43	33.8%	5.0	43.0
Residential - gas	1.27	233.1%	4.5	47.5
Manufacturing industries - oil	1.00	-54.3%	3.5	51.0
Non-specified other - oil	0.95	-38.0%	3.3	54.3
Residential - oil	0.63	-27.3%	2.2	56.5
<i>Memo: total CO₂ from fuel combustion</i>	<i>18.77</i>	<i>-12.7%</i>	<i>65.7</i>	<i>65.7</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Cuba

Figure 1. CO₂ emissions by fuel

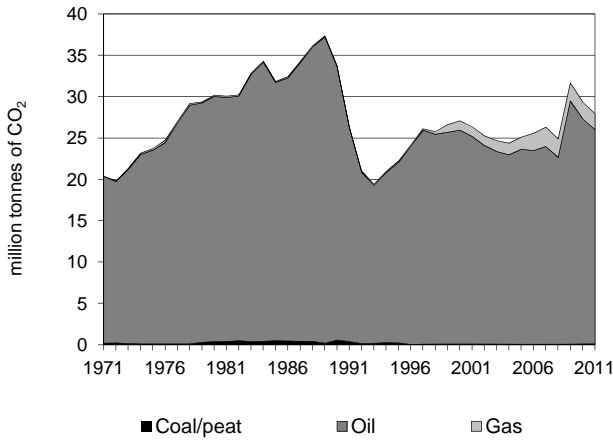


Figure 2. CO₂ emissions by sector

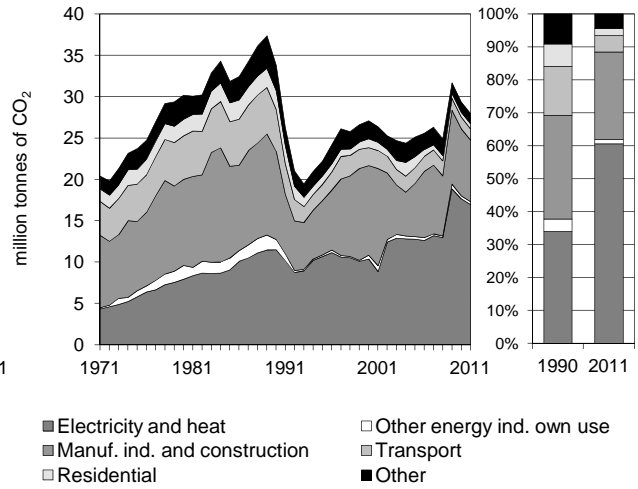


Figure 3. Reference vs Sectoral Approach

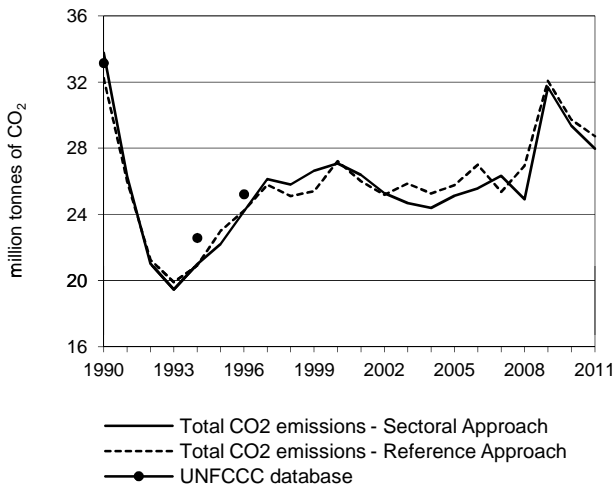


Figure 4. Electricity generation by fuel

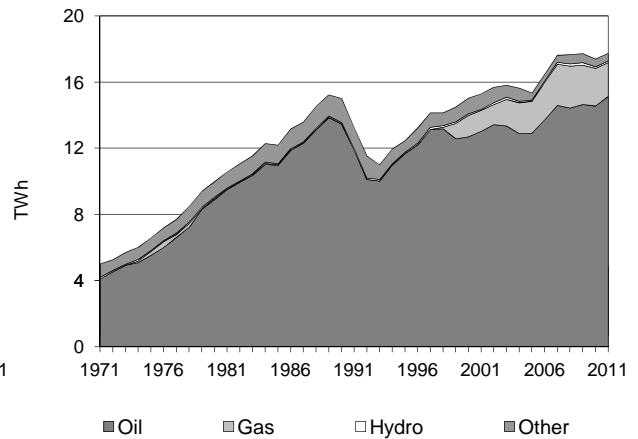


Figure 5. Changes in selected indicators *

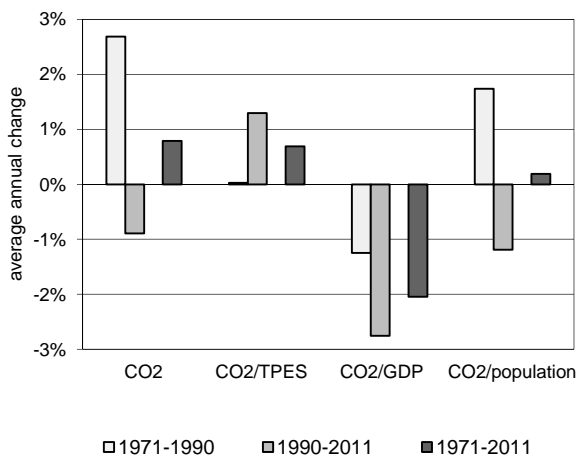
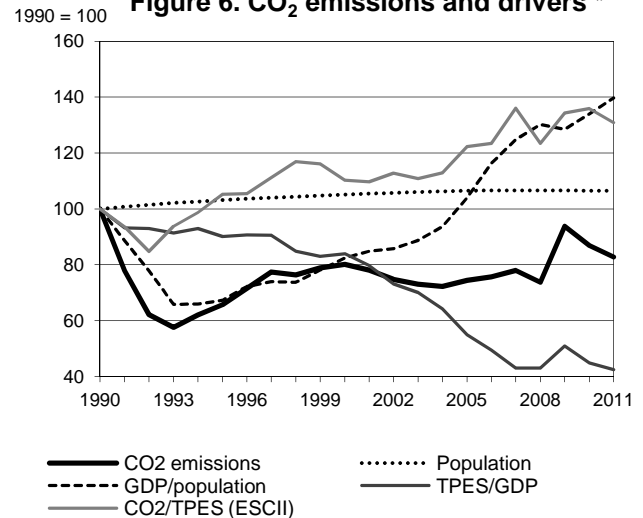


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Cuba

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	33.79	22.21	27.09	25.13	31.68	29.37	27.97	-17.2%
TPES (PJ)	741	463	538	450	517	473	468	-36.8%
GDP (billion 2005 USD)	38.54	26.73	33.38	42.64	52.78	54.98	57.34	48.8%
GDP PPP (billion 2005 USD)	43.68	30.30	37.82	48.33	59.81	62.31	64.98	48.8%
Population (millions)	10.57	10.90	11.10	11.25	11.26	11.26	11.25	6.5%
CO ₂ / TPES (tCO ₂ per TJ)	45.6	48.0	50.3	55.8	61.3	62.0	59.7	30.9%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.88	0.83	0.81	0.59	0.60	0.53	0.49	-44.4%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.77	0.73	0.72	0.52	0.53	0.47	0.43	-44.4%
CO ₂ / population (tCO ₂ per capita)	3.20	2.04	2.44	2.23	2.81	2.61	2.49	-22.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	66	80	74	94	87	83	-17.2%
Population	100	103	105	106	107	107	106	6.5%
GDP per population (GDP per capita)	100	67	82	104	129	134	140	39.7%
Energy intensity (TPES/GDP)	100	90	84	55	51	45	43	-57.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	105	110	122	134	136	131	30.9%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.12	25.92	1.94	-	27.97	-17.2%
Main activity producer elec. and heat	-	15.10	1.03	-	16.13	52.6%
Unallocated autoproducers	-	0.82	-	-	0.82	-11.5%
Other energy industry own use	-	0.35	-	-	0.35	-72.3%
Manufacturing industries and construction	0.12	6.58	0.75	-	7.46	-30.0%
Transport	-	1.37	-	-	1.37	-72.7%
<i>of which: road</i>	-	1.23	-	-	1.23	-71.7%
Other	-	1.70	0.15	-	1.85	-65.4%
<i>of which: residential</i>	-	0.48	0.14	-	0.62	-72.8%
Reference Approach	0.12	26.72	1.89	-	28.73	-10.9%
Diff. due to losses and/or transformation	0.00	0.80	-0.04	-	0.76	
Statistical differences	-	0.00	0.00	-	0.00	
<i>Memo: international marine bunkers</i>	-	0.09	-	-	0.09	81.8%
<i>Memo: international aviation bunkers</i>	-	0.37	-	-	0.37	-62.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - oil	15.10	43.0%	33.9	33.9
Manufacturing industries - oil	6.58	-34.7%	14.8	48.7
Road - oil	1.23	-71.7%	2.8	51.5
Non-specified other - oil	1.23	-60.0%	2.8	54.3
Main activity prod. elec. and heat - gas	1.03	+	2.3	56.6
Unallocated autoproducers - oil	0.82	-11.5%	1.8	58.4
Manufacturing industries - gas	0.75	+	1.7	60.1
Residential - oil	0.48	-78.1%	1.1	61.2
Other energy industry own use - oil	0.35	-72.3%	0.8	62.0
<i>Memo: total CO₂ from fuel combustion</i>	<i>27.97</i>	<i>-17.2%</i>	<i>62.9</i>	<i>62.9</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Cyprus *

Figure 1. CO₂ emissions by fuel

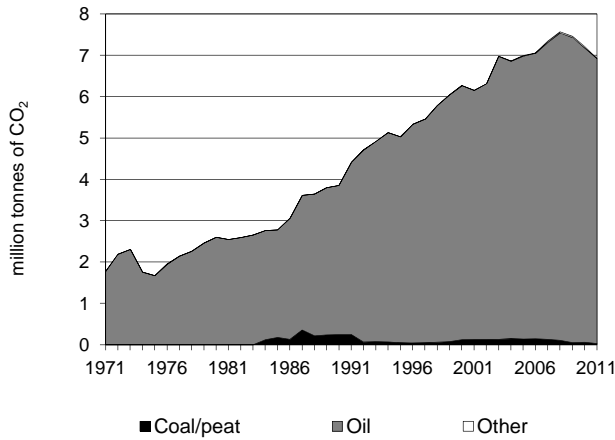


Figure 2. CO₂ emissions by sector

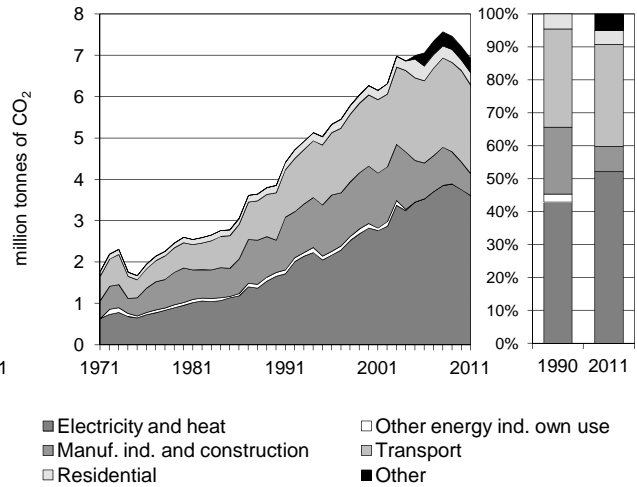


Figure 3. Reference vs Sectoral Approach

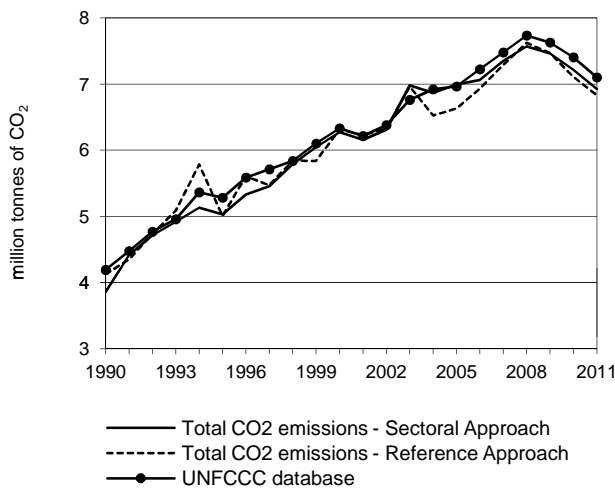


Figure 4. Electricity generation by fuel

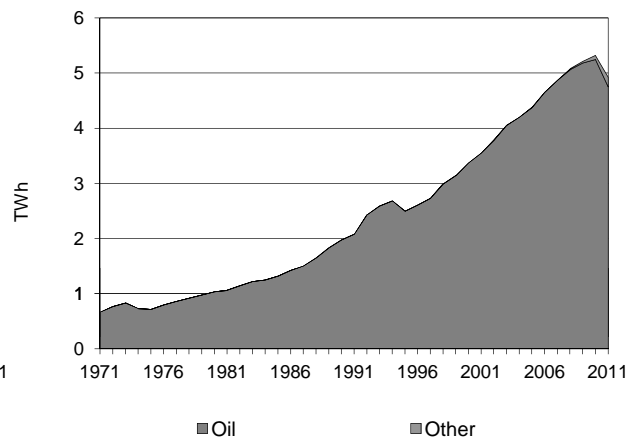


Figure 5. Changes in selected indicators **

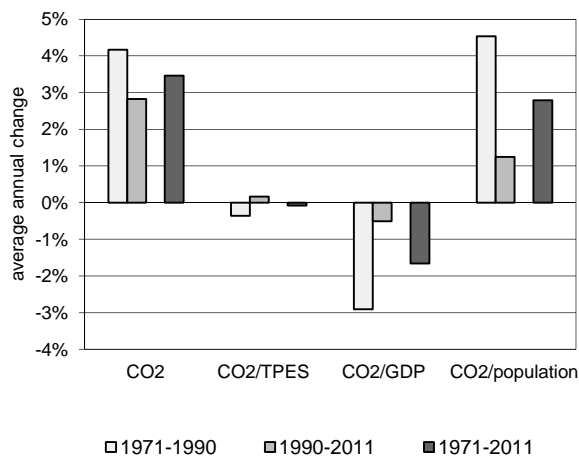
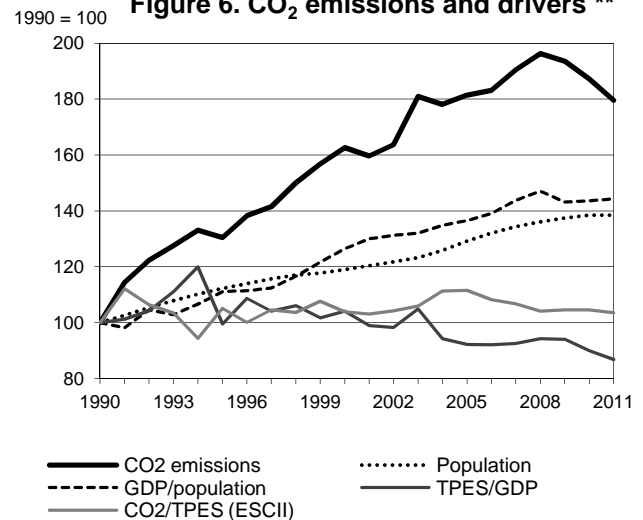


Figure 6. CO₂ emissions and drivers **



* Please refer to Part I, Chapter 4, Geographical Coverage.

** Based on GDP in 2005 USD, using purchasing power parities.

Cyprus *

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	3.86	5.03	6.27	6.99	7.46	7.22	6.93	79.6%
TPES (PJ)	57	71	89	93	106	102	99	73.5%
GDP (billion 2005 USD)	9.64	12.02	14.50	17.00	18.96	19.18	19.27	99.9%
GDP PPP (billion 2005 USD)	10.49	13.08	15.78	18.50	20.63	20.87	20.97	99.9%
Population (millions)	0.58	0.65	0.69	0.75	0.80	0.80	0.80	38.4%
CO ₂ / TPES (tCO ₂ per TJ)	67.5	70.9	70.1	75.3	70.6	70.6	69.9	3.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.40	0.42	0.43	0.41	0.39	0.38	0.36	-10.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.37	0.38	0.40	0.38	0.36	0.35	0.33	-10.1%
CO ₂ / population (tCO ₂ per capita)	6.65	7.73	9.09	9.34	9.37	8.99	8.63	29.7%
CO₂ emissions and drivers - Kaya decomposition (1990=100) **								
CO ₂ emissions	100	130	163	181	194	187	180	79.6%
Population	100	112	119	129	137	138	138	38.4%
GDP per population (GDP per capita)	100	111	126	137	143	144	144	44.4%
Energy intensity (TPES/GDP)	100	100	104	92	94	90	87	-13.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	105	104	112	105	105	104	3.5%

* Please refer to Part I, Chapter 4, Geographical Coverage. ** Please see Part I, Chapter 1 for methodological notes. Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 90-11
Sectoral Approach	0.03	6.90	-	0.00	6.93	79.6%
Main activity producer elec. and heat	-	3.59	-	-	3.59	117.1%
Unallocated autoproducers	-	0.02	-	-	0.02	x
Other energy industry own use	-	-	-	-	-	-100.0%
Manufacturing industries and construction	0.03	0.50	-	0.00	0.53	-32.0%
Transport	-	2.14	-	-	2.14	86.7%
<i>of which: road</i>	-	2.14	-	-	2.14	86.4%
Other	0.00	0.64	-	-	0.64	260.9%
<i>of which: residential</i>	-	0.30	-	-	0.30	68.4%
Reference Approach	0.03	6.80	-	0.00	6.83	65.4%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	-0.10	-	-	-0.10	-
<i>Memo: international marine bunkers</i>	-	0.61	-	-	0.61	242.3%
<i>Memo: international aviation bunkers</i>	-	0.89	-	-	0.89	24.6%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - oil	3.59	117.1%	40.0	40.0
Road - oil	2.14	86.4%	23.8	63.8
Manufacturing industries - oil	0.50	-5.9%	5.6	69.4
Non-specified other - oil	0.34	x	3.8	73.2
Residential - oil	0.30	68.4%	3.3	76.6
Manufacturing industries - coal/peat	0.03	-88.5%	0.3	76.9
Unallocated autoproducers - oil	0.02	x	0.2	77.1
Other transport - oil	0.00	x	0.0	77.1
Non-specified other sectors - coal/peat	0.00	x	0.0	77.1
<i>Memo: total CO₂ from fuel combustion</i>	<i>6.93</i>	<i>79.6%</i>	<i>77.1</i>	<i>77.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Czech Republic

Figure 1. CO₂ emissions by fuel

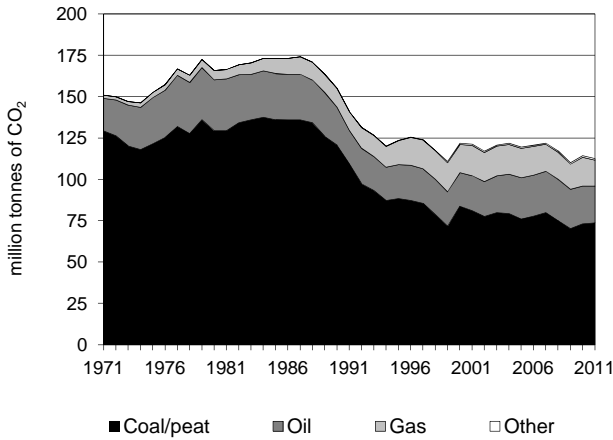


Figure 2. CO₂ emissions by sector

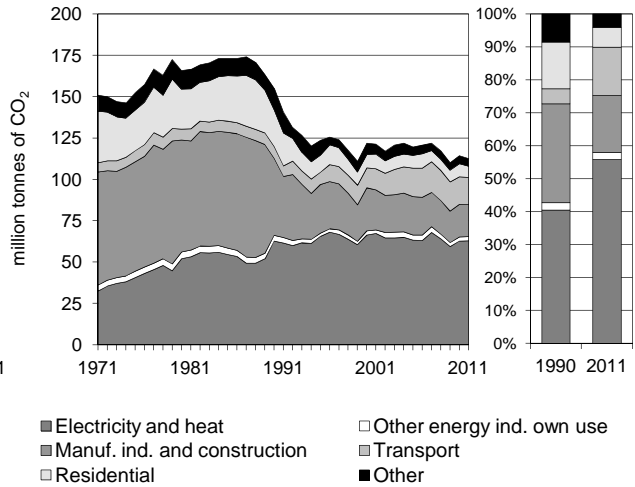


Figure 3. Reference vs Sectoral Approach

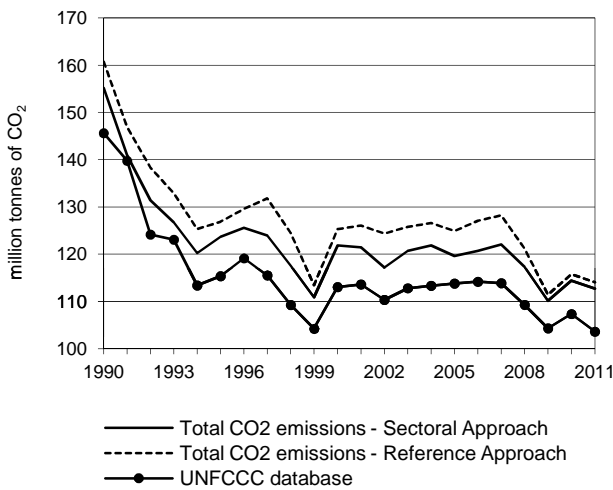


Figure 4. Electricity generation by fuel

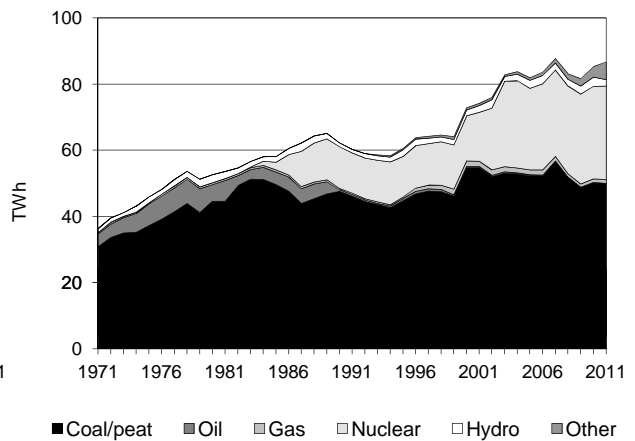


Figure 5. Changes in selected indicators *

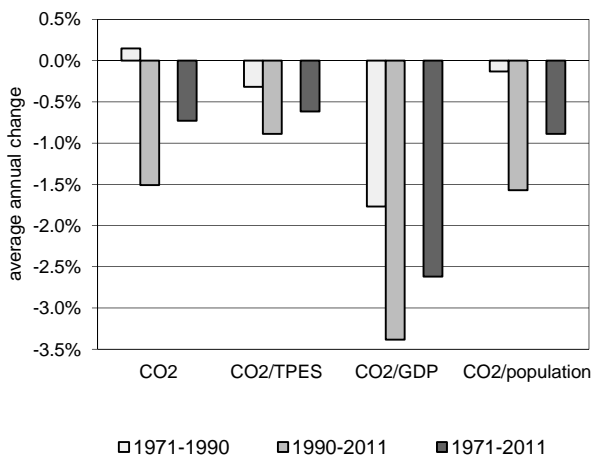
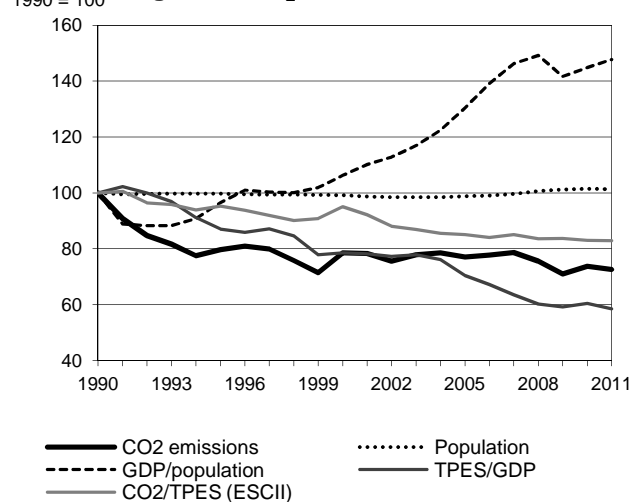


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Czech Republic

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	155.14	123.68	121.88	119.59	110.12	114.38	112.68	-27.4%
TPES (PJ)	2 075	1 737	1 716	1 882	1 760	1 844	1 818	-12.4%
GDP (billion 2005 USD)	101.03	97.17	106.45	130.07	144.90	148.48	151.18	49.6%
GDP PPP (billion 2005 USD)	169.06	162.62	178.13	217.66	242.49	248.47	252.99	49.6%
Population (millions)	10.36	10.33	10.27	10.23	10.49	10.52	10.50	1.3%
CO ₂ / TPES (tCO ₂ per TJ)	74.8	71.2	71.0	63.6	62.6	62.0	62.0	-17.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.54	1.27	1.15	0.92	0.76	0.77	0.75	-51.5%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.92	0.76	0.68	0.55	0.45	0.46	0.45	-51.5%
CO ₂ / population (tCO ₂ per capita)	14.97	11.97	11.86	11.69	10.50	10.88	10.73	-28.3%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	80	79	77	71	74	73	-27.4%
Population	100	100	99	99	101	101	101	1.3%
GDP per population (GDP per capita)	100	96	106	130	142	145	148	47.7%
Energy intensity (TPES/GDP)	100	87	78	70	59	60	59	-41.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	95	85	84	83	83	-17.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	73.79	22.15	15.74	0.99	112.68	-27.4%
Main activity producer elec. and heat	55.23	0.14	1.93	0.04	57.33	8.6%
Unallocated autoproducers	4.87	0.10	0.39	0.26	5.62	-43.7%
Other energy industry own use	1.43	0.75	0.23	-	2.41	-30.8%
Manufacturing industries and construction	10.03	3.69	5.08	0.61	19.40	-58.3%
Transport	0.00	16.36	0.17	-	16.53	130.2%
<i>of which: road</i>	-	15.70	0.02	-	15.72	128.6%
Other	2.24	1.12	7.94	0.08	11.38	-67.7%
<i>of which: residential</i>	2.07	0.01	4.68	-	6.76	-69.2%
Reference Approach	73.92	22.38	16.77	0.99	114.06	-29.0%
Diff. due to losses and/or transformation	1.61	0.18	0.30	-	2.08	
Statistical differences	- 1.48	0.06	0.73	0.00	- 0.69	
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	0.91	-	-	0.91	40.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	55.23	9.3%	38.7	38.7
Road - oil	15.70	128.2%	11.0	49.7
Manufacturing industries - coal/peat	10.03	-67.7%	7.0	56.8
Manufacturing industries - gas	5.08	-10.0%	3.6	60.3
Unallocated autoproducers - coal/peat	4.87	-46.2%	3.4	63.8
Residential - gas	4.68	118.1%	3.3	67.0
Manufacturing industries - oil	3.69	-62.6%	2.6	69.6
Non-specified other - gas	3.26	53.5%	2.3	71.9
Residential - coal/peat	2.07	-89.4%	1.4	73.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>112.68</i>	<i>-27.4%</i>	<i>79.0</i>	<i>79.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Denmark

Figure 1. CO₂ emissions by fuel

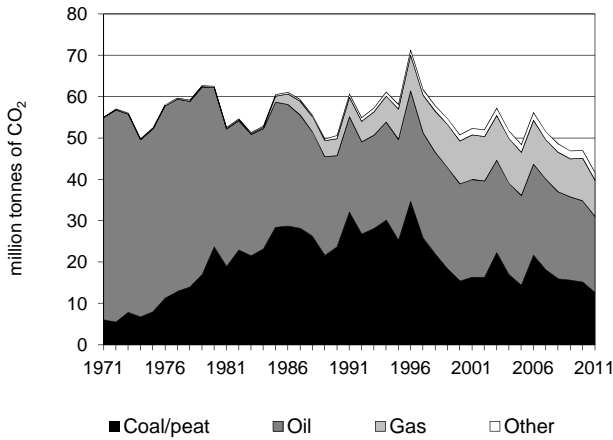


Figure 2. CO₂ emissions by sector

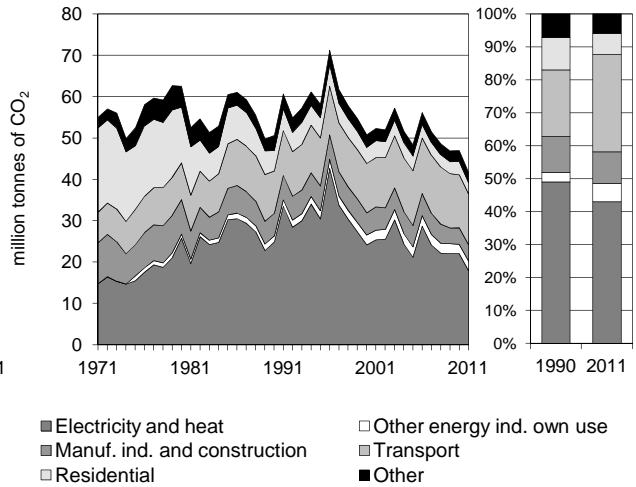


Figure 3. Reference vs Sectoral Approach

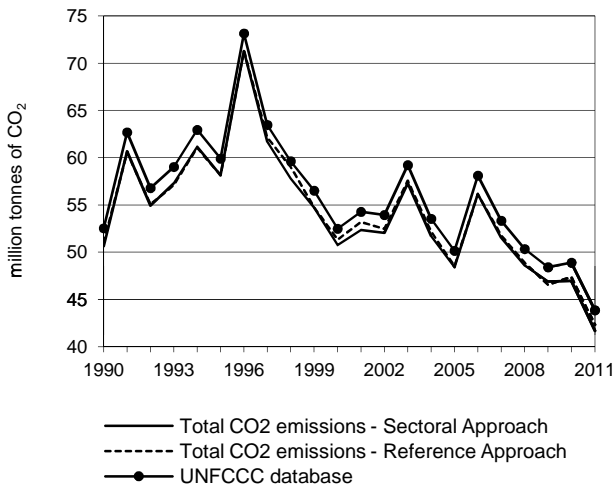


Figure 4. Electricity generation by fuel

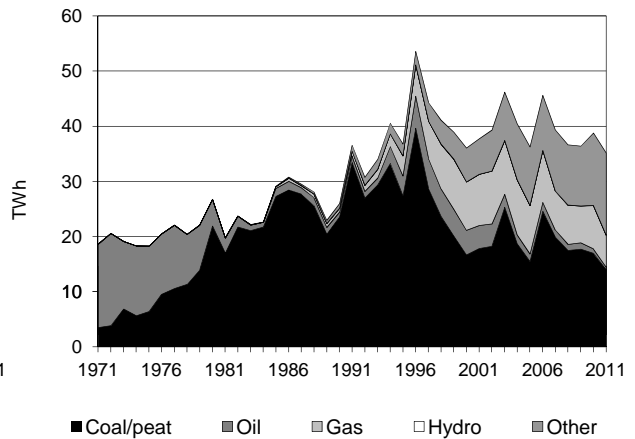


Figure 5. Changes in selected indicators *

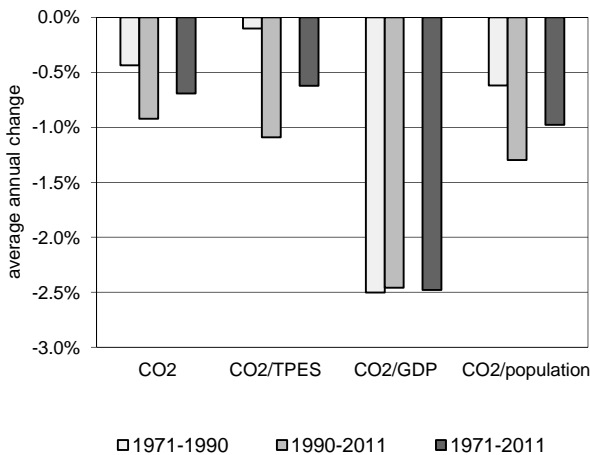
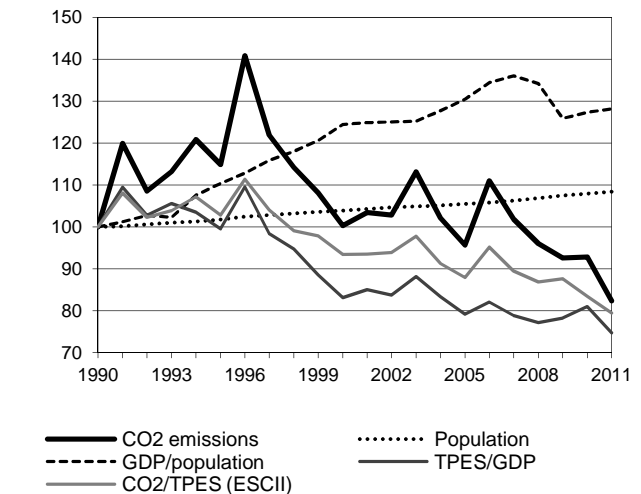


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Denmark

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	50.63	58.14	50.76	48.41	46.88	46.97	41.68	-17.7%
TPES (PJ)	727	812	780	791	769	808	754	3.7%
GDP (billion 2005 USD)	187.36	210.31	242.10	257.68	253.30	257.30	260.14	38.8%
GDP PPP (billion 2005 USD)	130.80	146.82	169.01	179.89	176.84	179.63	181.61	38.8%
Population (millions)	5.14	5.23	5.34	5.42	5.52	5.55	5.57	8.3%
CO ₂ / TPES (tCO ₂ per TJ)	69.7	71.6	65.1	61.2	61.0	58.1	55.3	-20.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.27	0.28	0.21	0.19	0.19	0.18	0.16	-40.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.39	0.40	0.30	0.27	0.27	0.26	0.23	-40.7%
CO ₂ / population (tCO ₂ per capita)	9.85	11.12	9.51	8.93	8.49	8.47	7.48	-24.0%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	115	100	96	93	93	82	-17.7%
Population	100	102	104	105	107	108	108	8.3%
GDP per population (GDP per capita)	100	110	124	130	126	127	128	28.2%
Energy intensity (TPES/GDP)	100	100	83	79	78	81	75	-25.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	103	93	88	88	83	79	-20.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	12.65	18.45	8.70	1.88	41.68	-17.7%
Main activity producer elec. and heat	12.04	0.37	3.32	0.46	16.19	-32.3%
Unallocated autoproducers	0.01	0.14	0.29	1.31	1.75	85.6%
Other energy industry own use	-	0.90	1.40	-	2.30	57.9%
Manufacturing industries and construction	0.46	1.79	1.65	0.08	3.98	-27.5%
Transport	-	12.31	-	-	12.31	20.1%
<i>of which: road</i>	-	11.26	-	-	11.26	23.6%
Other	0.14	2.94	2.04	0.03	5.15	-40.0%
<i>of which: residential</i>	0.03	1.21	1.45	-	2.69	-45.5%
Reference Approach	12.56	19.20	8.69	1.88	42.33	-17.0%
Diff. due to losses and/or transformation	-0.03	1.06	0.04	-	1.07	
Statistical differences	-0.06	-0.31	-0.05	-0.00	-0.43	
<i>Memo: international marine bunkers</i>	-	2.19	-	-	2.19	-27.5%
<i>Memo: international aviation bunkers</i>	-	2.46	-	-	2.46	44.3%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	12.04	-45.1%	21.7	21.7
Road - oil	11.26	23.6%	20.3	41.9
Main activity prod. elec. and heat - gas	3.32	238.8%	6.0	47.9
Manufacturing industries - oil	1.79	-40.1%	3.2	51.1
Non-specified other - oil	1.72	-40.9%	3.1	54.2
Manufacturing industries - gas	1.65	32.4%	3.0	57.2
Residential - gas	1.45	61.0%	2.6	59.8
Other energy industry own use - gas	1.40	174.4%	2.5	62.3
Unallocated autoproducers - other	1.31	110.1%	2.4	64.7
<i>Memo: total CO₂ from fuel combustion</i>	<i>41.68</i>	<i>-17.7%</i>	<i>75.0</i>	<i>75.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Dominican Republic

Figure 1. CO₂ emissions by fuel

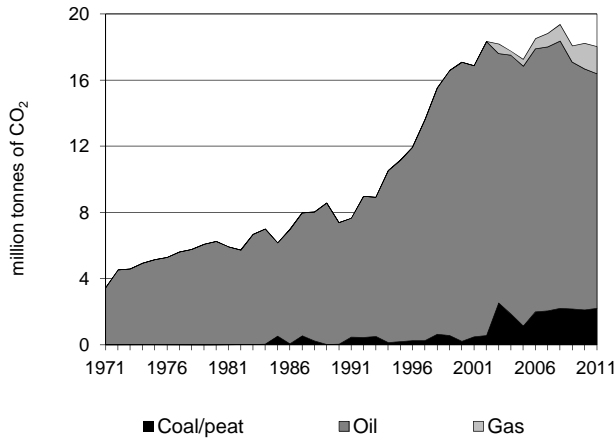


Figure 2. CO₂ emissions by sector

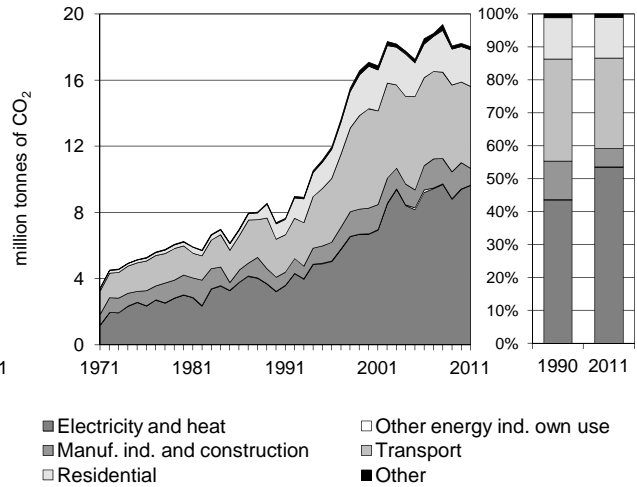


Figure 3. Reference vs Sectoral Approach

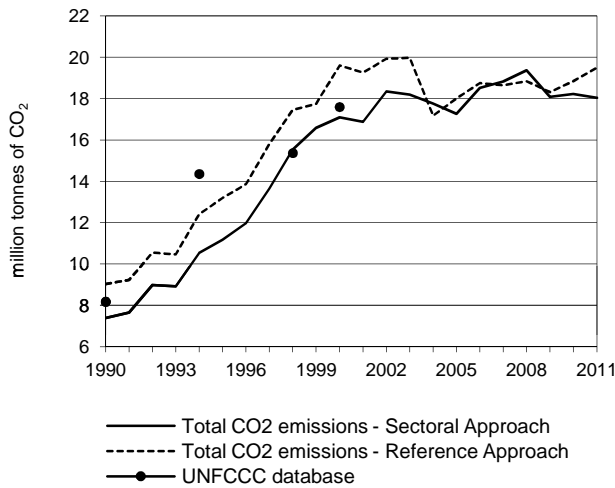


Figure 4. Electricity generation by fuel

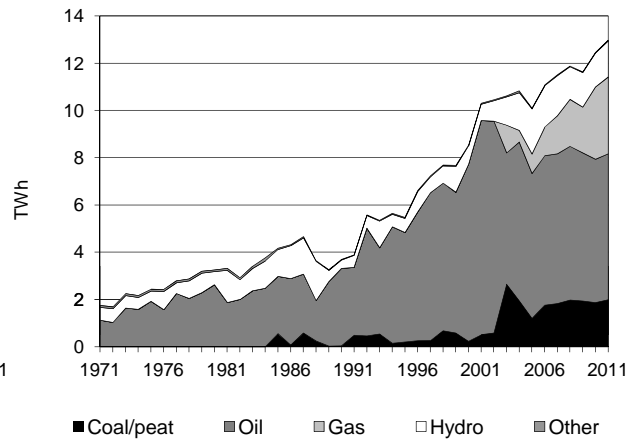


Figure 5. Changes in selected indicators *

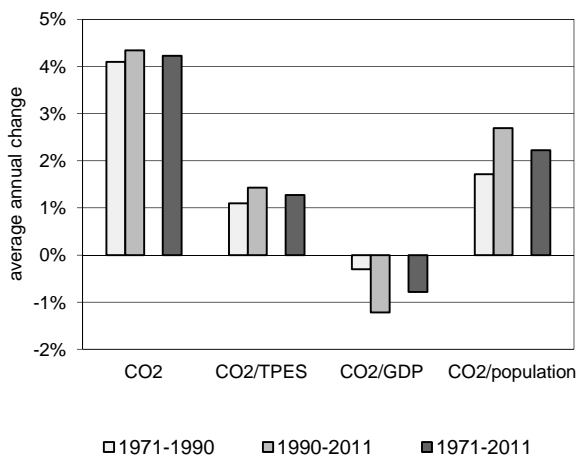
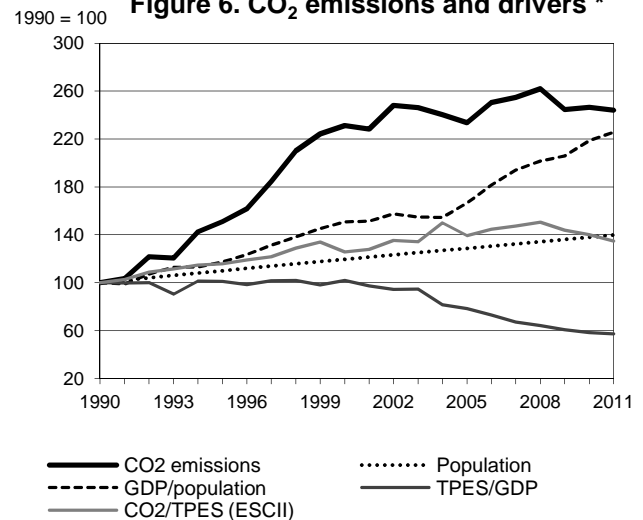


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Dominican Republic

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	7.39	11.17	17.09	17.26	18.08	18.22	18.03	144.0%
TPES (PJ)	171	223	314	286	291	301	309	81.0%
GDP (billion 2005 USD)	15.87	20.48	28.59	34.00	44.45	47.90	50.04	215.4%
GDP PPP (billion 2005 USD)	27.58	35.60	49.71	59.11	77.27	83.26	86.99	215.4%
Population (millions)	7.20	7.92	8.59	9.26	9.80	9.93	10.06	39.8%
CO ₂ / TPES (tCO ₂ per TJ)	43.3	50.1	54.4	60.3	62.2	60.6	58.3	34.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.47	0.55	0.60	0.51	0.41	0.38	0.36	-22.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.27	0.31	0.34	0.29	0.23	0.22	0.21	-22.6%
CO ₂ / population (tCO ₂ per capita)	1.03	1.41	1.99	1.86	1.85	1.84	1.79	74.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	151	231	234	245	247	244	144.0%
Population	100	110	119	129	136	138	140	39.8%
GDP per population (GDP per capita)	100	117	151	166	206	219	226	125.7%
Energy intensity (TPES/GDP)	100	101	102	78	61	58	57	-42.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	116	126	139	144	140	135	34.8%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	2.22	14.18	1.63	-	18.03	144.0%
Main activity producer elec. and heat	1.90	4.09	1.63	-	7.62	328.9%
Unallocated autoproducers	-	2.02	-	-	2.02	40.9%
Other energy industry own use	-	0.03	-	-	0.03	28.6%
Manufacturing industries and construction	0.32	0.69	-	-	1.00	16.5%
Transport	-	4.94	-	-	4.94	116.0%
<i>of which: road</i>	-	3.97	-	-	3.97	79.9%
Other	-	2.42	-	-	2.42	139.7%
<i>of which: residential</i>	-	2.23	-	-	2.23	140.8%
Reference Approach	2.43	15.25	1.82	-	19.49	116.1%
Diff. due to losses and/or transformation	-	0.17	-	-	0.17	
Statistical differences	0.21	0.89	0.19	-	1.29	
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.32	-	-	0.32	177.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - oil	4.09	135.4%	14.4	14.4
Road - oil	3.97	79.9%	13.9	28.3
Residential - oil	2.23	140.8%	7.9	36.2
Unallocated autoproducers - oil	2.02	40.9%	7.1	43.3
Main activity prod. elec. and heat - coal/peat	1.90	+	6.7	49.9
Main activity prod. elec. and heat - gas	1.63	x	5.7	55.7
Other transport - oil	0.98	+	3.4	59.1
Manufacturing industries - oil	0.69	-20.3%	2.4	61.5
Manufacturing industries - coal/peat	0.32	x	1.1	62.6
<i>Memo: total CO₂ from fuel combustion</i>	<i>18.03</i>	<i>144.0%</i>	<i>63.4</i>	<i>63.4</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Ecuador

Figure 1. CO₂ emissions by fuel

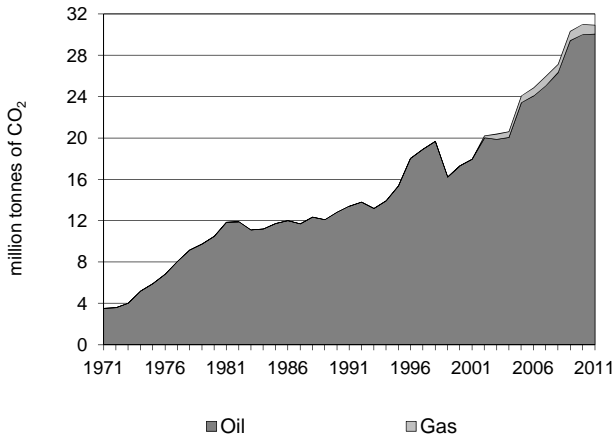


Figure 2. CO₂ emissions by sector

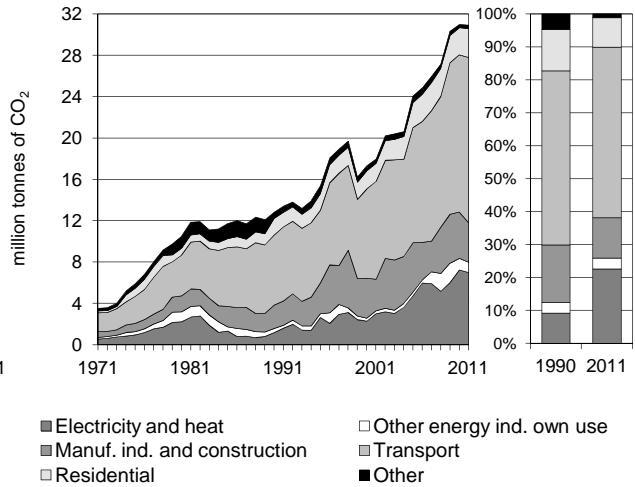


Figure 3. Reference vs Sectoral Approach

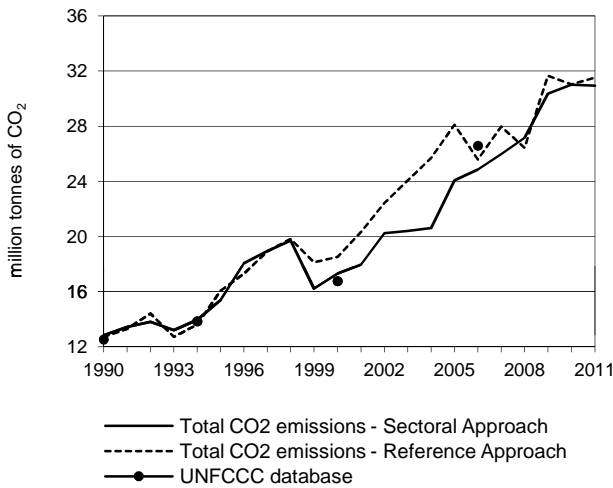


Figure 4. Electricity generation by fuel

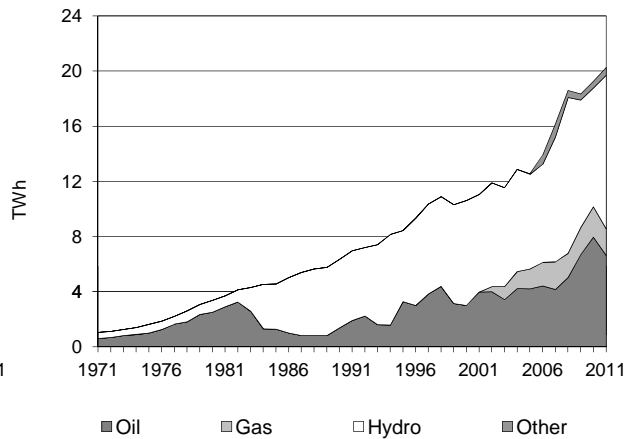


Figure 5. Changes in selected indicators *

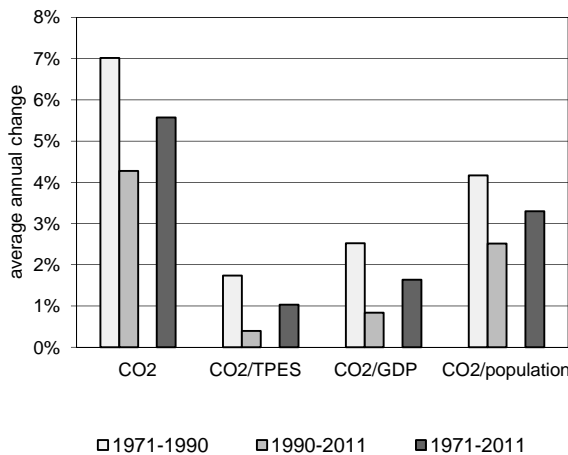
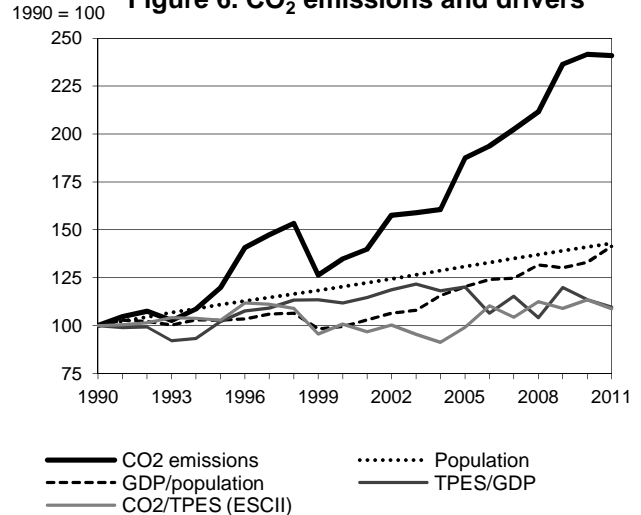


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Ecuador

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	12.84	15.38	17.32	24.08	30.35	31.01	30.93	140.9%
TPES (PJ)	245	285	327	463	531	520	542	121.6%
GDP (billion 2005 USD)	23.48	26.79	28.08	36.94	42.50	44.02	47.45	102.1%
GDP PPP (billion 2005 USD)	55.55	63.38	66.43	87.41	100.56	104.16	112.27	102.1%
Population (millions)	10.26	11.39	12.35	13.43	14.26	14.47	14.67	42.9%
CO ₂ / TPES (tCO ₂ per TJ)	52.5	54.0	52.9	52.1	57.2	59.6	57.1	8.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.55	0.57	0.62	0.65	0.71	0.70	0.65	19.2%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.23	0.24	0.26	0.28	0.30	0.30	0.28	19.2%
CO ₂ / population (tCO ₂ per capita)	1.25	1.35	1.40	1.79	2.13	2.14	2.11	68.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	120	135	188	236	242	241	140.9%
Population	100	111	120	131	139	141	143	42.9%
GDP per population (GDP per capita)	100	103	99	120	130	133	141	41.4%
Energy intensity (TPES/GDP)	100	102	112	120	120	113	110	9.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	103	101	99	109	114	109	8.7%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	30.05	0.87	-	30.93	140.9%
Main activity producer elec. and heat	-	3.85	0.51	-	4.36	266.4%
Unallocated autoproducers	-	2.28	0.36	-	2.64	x
Other energy industry own use	-	1.00	-	-	1.00	150.6%
Manufacturing industries and construction	-	3.80	-	-	3.80	69.0%
Transport	-	16.01	-	-	16.01	136.1%
<i>of which: road</i>	-	13.52	-	-	13.52	133.1%
Other	-	3.11	-	-	3.11	40.4%
<i>of which: residential</i>	-	2.76	-	-	2.76	72.4%
Reference Approach	-	30.65	0.87	-	31.53	148.3%
Diff. due to losses and/or transformation	-	0.71	-	-	0.71	
Statistical differences	-	- 0.11	-	-	- 0.11	
<i>Memo: international marine bunkers</i>	-	1.44	-	-	1.44	191.5%
<i>Memo: international aviation bunkers</i>	-	1.05	-	-	1.05	171.5%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	13.52	133.1%	23.4	23.4
Main activity prod. elec. and heat - oil	3.85	223.5%	6.7	30.1
Manufacturing industries - oil	3.80	69.0%	6.6	36.6
Residential - oil	2.76	72.4%	4.8	41.4
Other transport - oil	2.50	154.3%	4.3	45.7
Unallocated autoproducers - oil	2.28	x	3.9	49.7
Other energy industry own use - oil	1.00	150.6%	1.7	51.4
Main activity prod. elec. and heat - gas	0.51	x	0.9	52.3
Unallocated autoproducers - gas	0.36	x	0.6	52.9
<i>Memo: total CO₂ from fuel combustion</i>	30.93	140.9%	53.5	53.5

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Egypt

Figure 1. CO₂ emissions by fuel

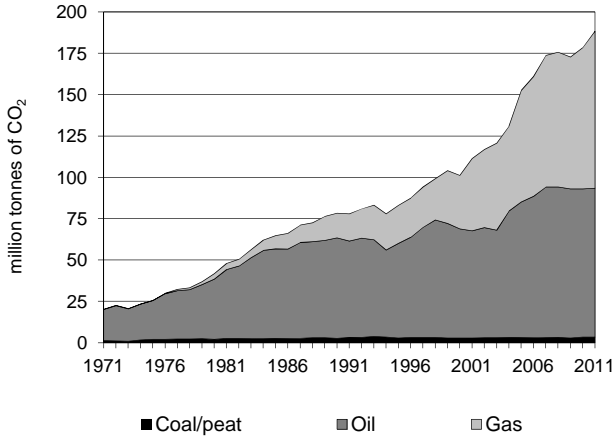


Figure 2. CO₂ emissions by sector

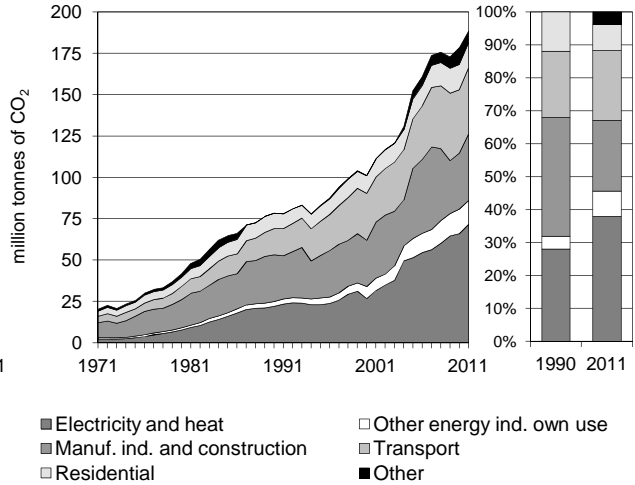


Figure 3. Reference vs Sectoral Approach

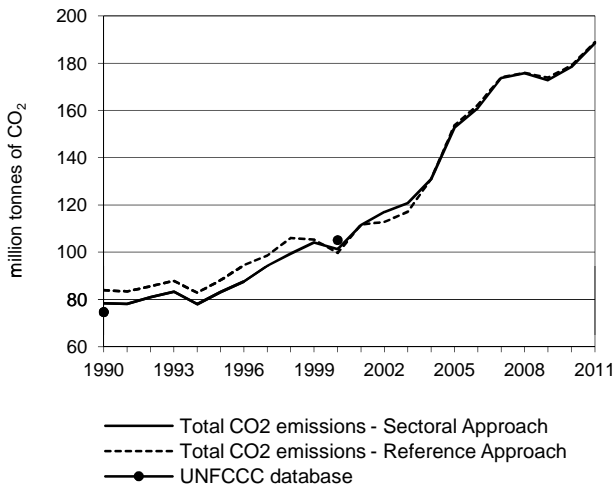


Figure 4. Electricity generation by fuel

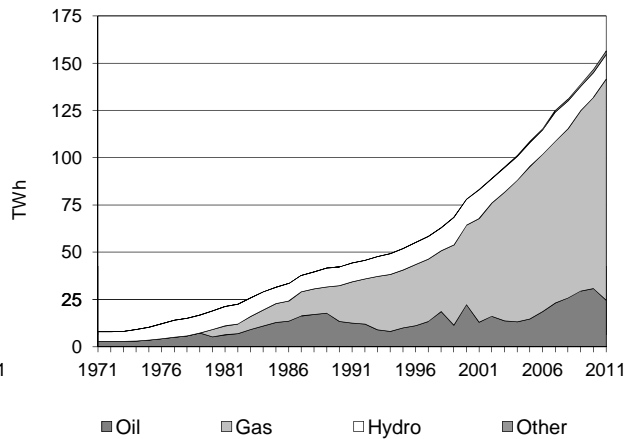


Figure 5. Changes in selected indicators *

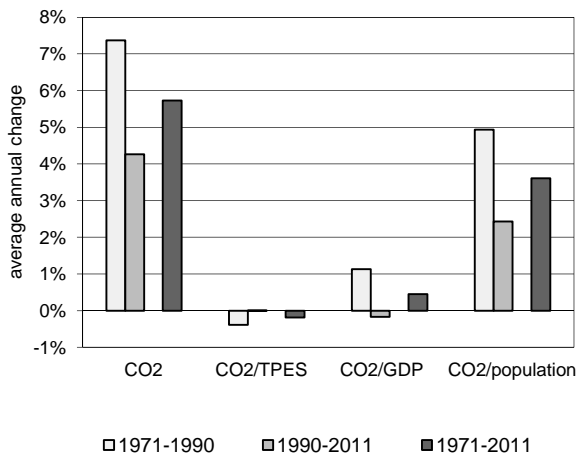
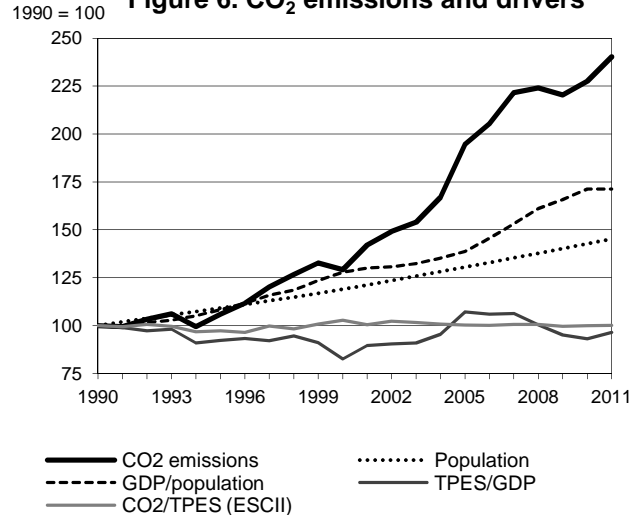


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Egypt

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	78.41	83.15	101.31	152.68	172.80	178.39	188.44	140.3%
TPES (PJ)	1 354	1 477	1 702	2 627	2 992	3 080	3 251	140.2%
GDP (billion 2005 USD)	49.53	58.53	75.40	89.69	115.07	120.99	123.22	148.8%
GDP PPP (billion 2005 USD)	184.02	217.47	280.15	333.22	427.69	449.70	457.79	148.8%
Population (millions)	56.84	62.06	67.65	74.20	79.72	81.12	82.54	45.2%
CO ₂ / TPES (tCO ₂ per TJ)	57.9	56.3	59.5	58.1	57.8	57.9	58.0	0.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.58	1.42	1.34	1.70	1.50	1.47	1.53	-3.4%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.43	0.38	0.36	0.46	0.40	0.40	0.41	-3.4%
CO ₂ / population (tCO ₂ per capita)	1.38	1.34	1.50	2.06	2.17	2.20	2.28	65.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	106	129	195	220	228	240	140.3%
Population	100	109	119	131	140	143	145	45.2%
GDP per population (GDP per capita)	100	108	128	139	166	171	171	71.3%
Energy intensity (TPES/GDP)	100	92	83	107	95	93	97	-3.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	97	103	100	100	100	100	0.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	3.43	90.09	94.92	-	188.44	140.3%
Main activity producer elec. and heat	-	14.25	57.36	-	71.62	225.0%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	2.56	11.87	-	14.43	384.3%
Manufacturing industries and construction	3.40	14.21	22.72	-	40.33	42.5%
Transport	-	39.05	0.90	-	39.95	154.3%
<i>of which: road</i>	-	36.13	0.90	-	37.03	145.6%
Other	0.02	20.03	2.06	-	22.11	135.4%
<i>of which: residential</i>	0.02	13.02	2.06	-	15.11	60.8%
Reference Approach	3.58	90.36	94.92	-	188.86	125.0%
Diff. due to losses and/or transformation	0.15	0.27	-	-	0.42	
Statistical differences	-	0.00	-	-	0.00	
<i>Memo: international marine bunkers</i>	-	1.20	-	-	1.20	-77.2%
<i>Memo: international aviation bunkers</i>	-	2.43	-	-	2.43	450.7%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - gas	57.36	518.1%	19.9	19.9
Road - oil	36.13	139.6%	12.5	32.4
Manufacturing industries - gas	22.72	383.4%	7.9	40.3
Main activity prod. elec. and heat - oil	14.25	11.8%	4.9	45.2
Manufacturing industries - oil	14.21	-32.1%	4.9	50.1
Residential - oil	13.02	41.1%	4.5	54.7
Other energy industry own use - gas	11.87	+	4.1	58.8
Non-specified other - oil	7.01	x	2.4	61.2
Manufacturing industries - coal/peat	3.40	27.5%	1.2	62.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>188.44</i>	<i>140.3%</i>	<i>65.3</i>	<i>65.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

El Salvador

Figure 1. CO₂ emissions by fuel

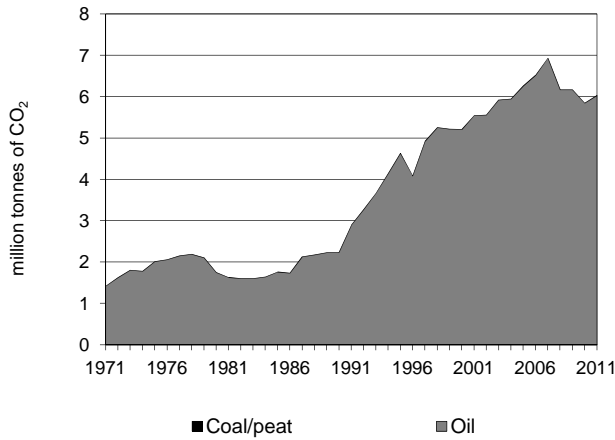


Figure 2. CO₂ emissions by sector

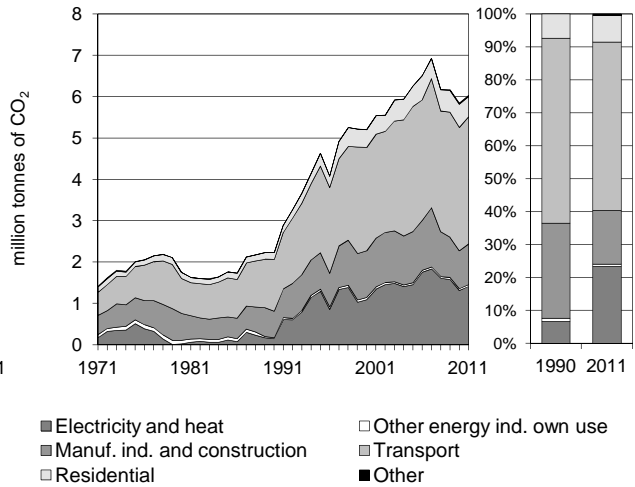


Figure 3. Reference vs Sectoral Approach

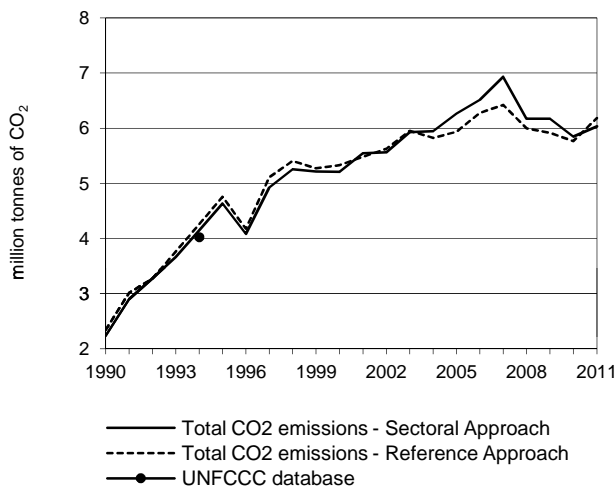


Figure 4. Electricity generation by fuel

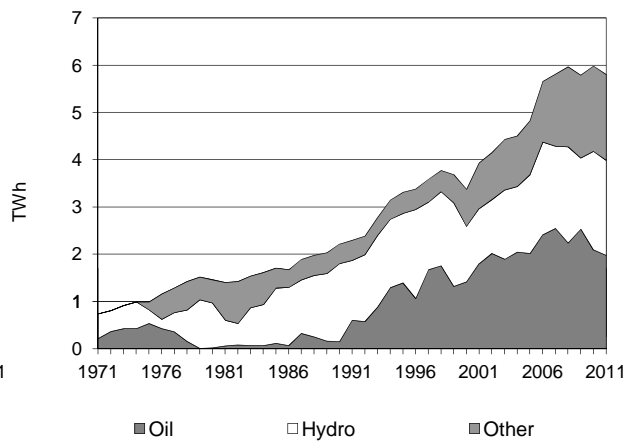


Figure 5. Changes in selected indicators *

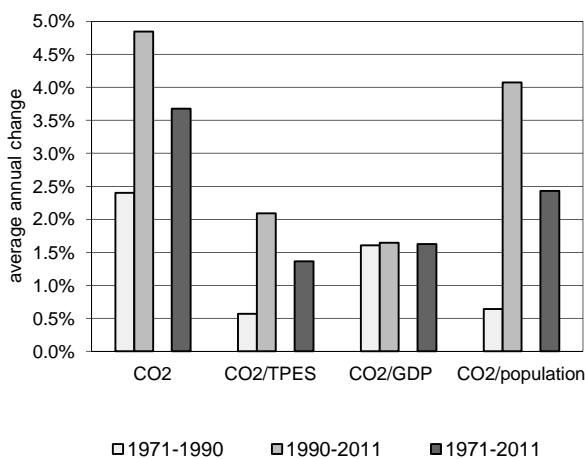
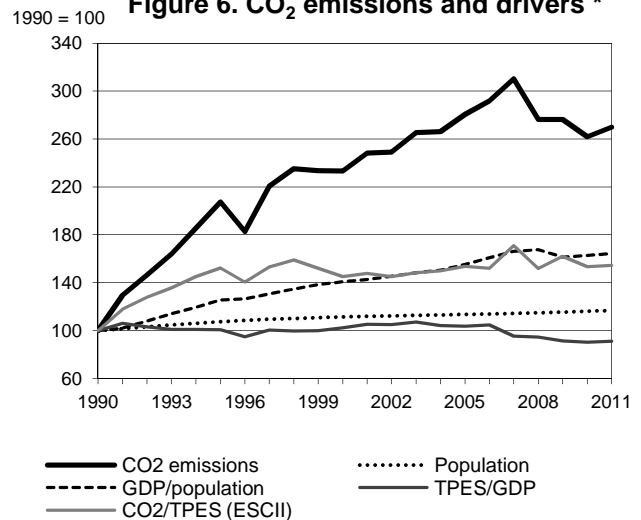


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

El Salvador

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2.23	4.63	5.21	6.26	6.17	5.85	6.03	170.0%
TPES (PJ)	103	141	166	189	176	176	181	74.9%
GDP (billion 2005 USD)	9.70	13.09	15.22	17.09	18.09	18.34	18.61	91.8%
GDP PPP (billion 2005 USD)	19.58	26.43	30.72	34.50	36.52	37.02	37.56	91.8%
Population (millions)	5.33	5.73	5.94	6.05	6.16	6.19	6.23	16.8%
CO ₂ / TPES (tCO ₂ per TJ)	21.6	32.9	31.4	33.2	35.0	33.2	33.3	54.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.23	0.35	0.34	0.37	0.34	0.32	0.32	40.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.11	0.18	0.17	0.18	0.17	0.16	0.16	40.8%
CO ₂ / population (tCO ₂ per capita)	0.42	0.81	0.88	1.04	1.00	0.94	0.97	131.3%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	207	233	280	276	262	270	170.0%
Population	100	108	111	113	116	116	117	16.8%
GDP per population (GDP per capita)	100	126	141	155	161	163	164	64.3%
Energy intensity (TPES/GDP)	100	101	102	104	92	90	91	-8.8%
Carbon intensity: ESCII (CO ₂ /TPES)	100	152	145	154	162	154	154	54.4%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	6.03	-	-	6.03	170.0%
Main activity producer elec. and heat	-	1.17	-	-	1.17	687.6%
Unallocated autoproducers	-	0.24	-	-	0.24	x
Other energy industry own use	-	0.04	-	-	0.04	85.7%
Manufacturing industries and construction	-	0.98	-	-	0.98	52.5%
Transport	-	3.08	-	-	3.08	145.8%
<i>of which: road</i>	-	3.08	-	-	3.08	145.8%
Other	-	0.51	-	-	0.51	211.0%
<i>of which: residential</i>	-	0.49	-	-	0.49	197.5%
Reference Approach	-	6.18	-	-	6.18	164.5%
Diff. due to losses and/or transformation	-	0.06	-	-	0.06	
Statistical differences	-	0.09	-	-	0.09	
<i>Memo: international marine bunkers</i>	-	..	-	-
<i>Memo: international aviation bunkers</i>	-	0.35	-	-	0.35	205.6%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	3.08	145.8%	28.1	28.1
Main activity prod. elec. and heat - oil	1.17	687.6%	10.7	38.7
Manufacturing industries - oil	0.98	52.5%	9.0	47.7
Residential - oil	0.49	197.5%	4.5	52.2
Unallocated autoproducers - oil	0.24	x	2.2	54.4
Other energy industry own use - oil	0.04	85.7%	0.4	54.8
Non-specified other - oil	0.02	x	0.2	55.0
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>6.03</i>	<i>170.0%</i>	<i>55.0</i>	<i>55.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Eritrea

Figure 1. CO₂ emissions by fuel

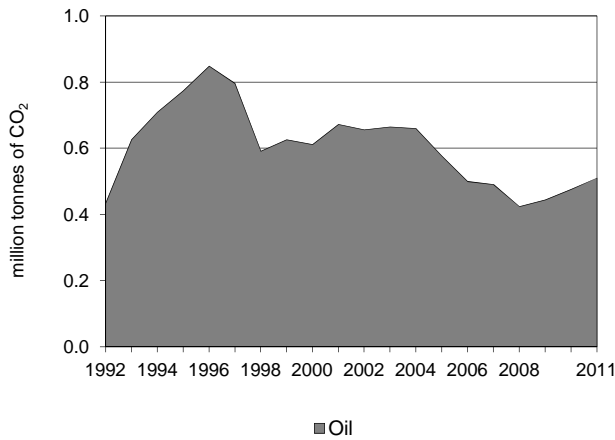


Figure 2. CO₂ emissions by sector

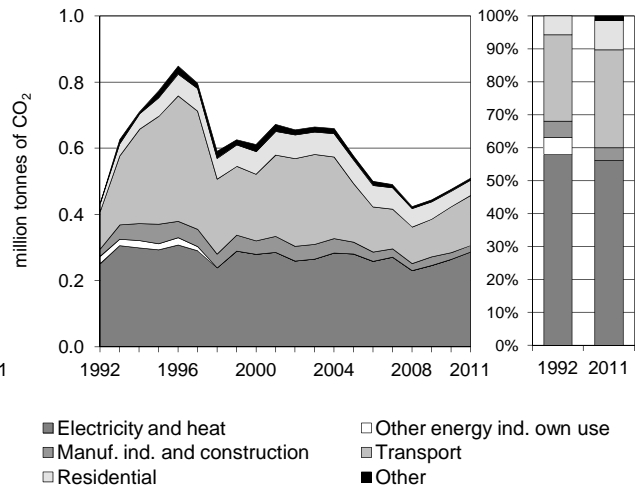


Figure 3. Reference vs Sectoral Approach

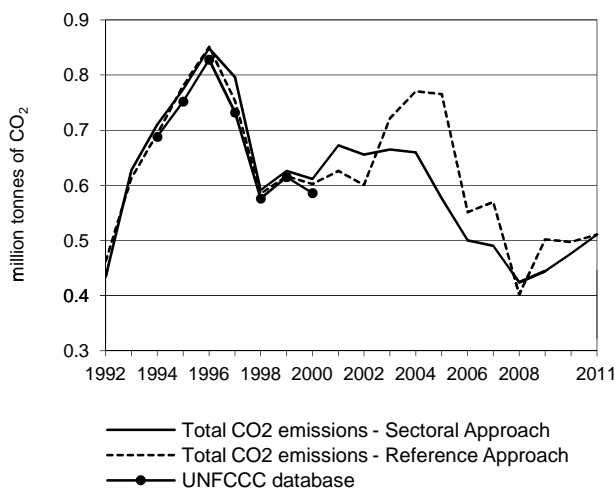


Figure 4. Electricity generation by fuel

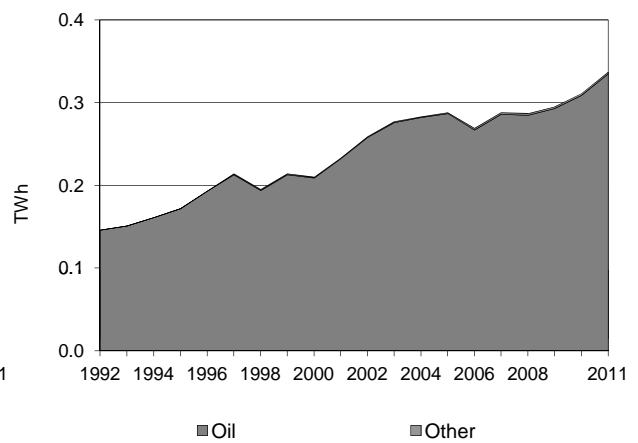


Figure 5. Changes in selected indicators *

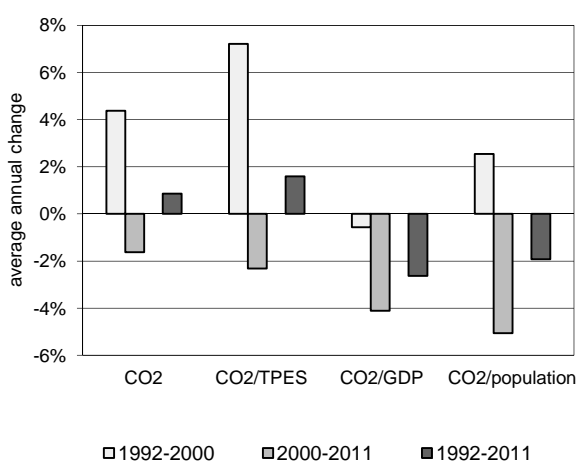
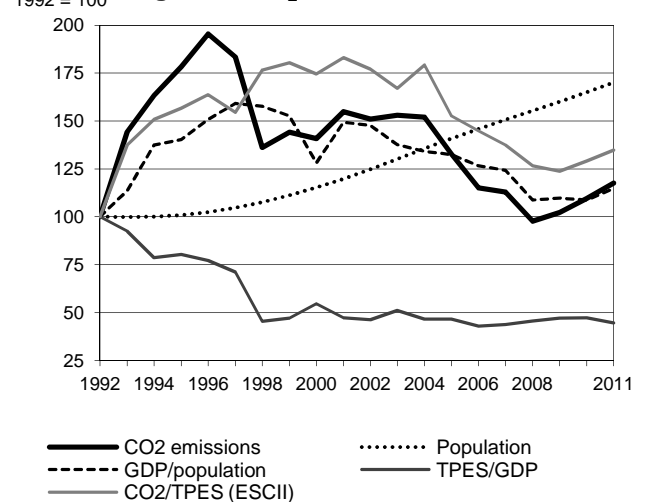


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Eritrea *

Key indicators

	1990	1992	2000	2005	2009	2010	2011	% change 92-11
CO ₂ Sectoral Approach (MtCO ₂)	..	0.43	0.61	0.58	0.44	0.48	0.51	17.6%
TPES (PJ)	..	37	30	32	30	31	32	-12.8%
GDP (billion 2005 USD)	..	0.59	0.87	1.10	1.03	1.06	1.15	95.1%
GDP PPP (billion 2005 USD)	..	1.43	2.11	2.67	2.52	2.57	2.80	95.2%
Population (millions)	..	3.18	3.67	4.49	5.10	5.25	5.42	70.1%
CO ₂ / TPES (tCO ₂ per TJ)	..	11.8	20.6	18.1	14.6	15.3	15.9	34.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	..	0.74	0.70	0.53	0.43	0.45	0.44	-39.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	..	0.30	0.29	0.22	0.18	0.19	0.18	-39.8%
CO ₂ / population (tCO ₂ per capita)	..	0.14	0.17	0.13	0.09	0.09	0.09	-30.9%
CO₂ emissions and drivers - Kaya decomposition (1992=100) **								
CO ₂ emissions	..	100	141	133	102	110	118	17.6%
Population	..	100	115	141	160	165	170	70.1%
GDP per population (GDP per capita)	..	100	128	132	110	109	115	14.8%
Energy intensity (TPES/GDP)	..	100	55	47	47	47	45	-55.3%
Carbon intensity: ESCII (CO ₂ /TPES)	..	100	175	153	124	129	135	34.8%

* Prior to 1992, data for Eritrea were included in Ethiopia. ** Please see Part I, Chapter 1 for methodological notes. Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 92-11
Sectoral Approach	-	0.51	-	-	0.51	17.6%
Main activity producer elec. and heat	-	0.27	-	-	0.27	189.5%
Unallocated autoproducers	-	0.01	-	-	0.01	-91.9%
Other energy industry own use	-	-	-	-	-	-100.0%
Manufacturing industries and construction	-	0.02	-	-	0.02	-7.1%
Transport	-	0.15	-	-	0.15	33.2%
<i>of which: road</i>	-	0.15	-	-	0.15	33.2%
Other	-	0.05	-	-	0.05	111.0%
<i>of which: residential</i>	-	0.05	-	-	0.05	86.2%
Reference Approach	-	0.51	-	-	0.51	10.4%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	-	-	-	-	-
<i>Memo: international marine bunkers</i>	-	..	-	-
<i>Memo: international aviation bunkers</i>	-	0.00	-	-	0.00	-75.0%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 92-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - oil	0.27	189.5%	5.9	5.9
Road - oil	0.15	33.2%	3.3	9.1
Residential - oil	0.05	86.2%	1.0	10.1
Manufacturing industries - oil	0.02	-7.1%	0.4	10.6
Unallocated autoproducers - oil	0.01	-91.9%	0.3	10.8
Non-specified other - oil	0.01	x	0.1	11.0
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>0.51</i>	<i>17.6%</i>	<i>11.0</i>	<i>11.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Estonia

Figure 1. CO₂ emissions by fuel

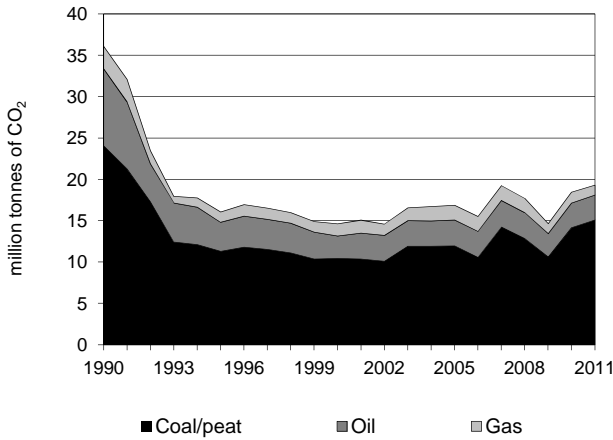


Figure 2. CO₂ emissions by sector

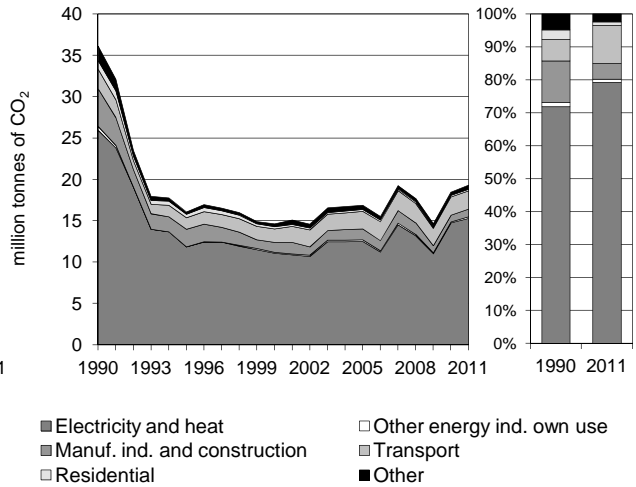


Figure 3. Reference vs Sectoral Approach

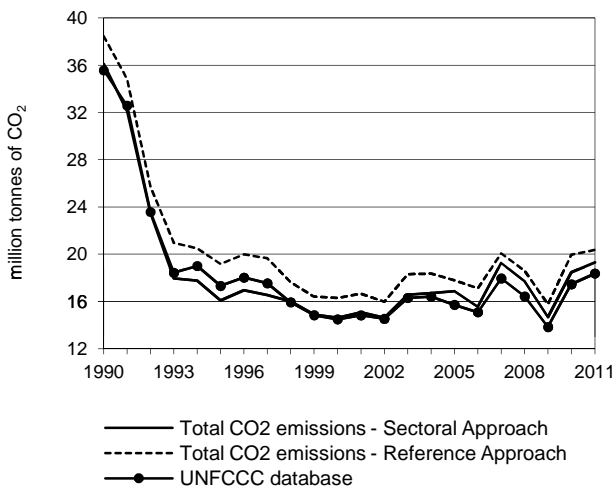


Figure 4. Electricity generation by fuel

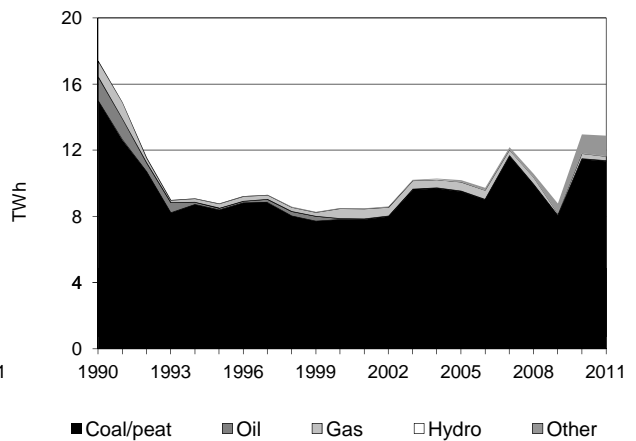


Figure 5. Changes in selected indicators *

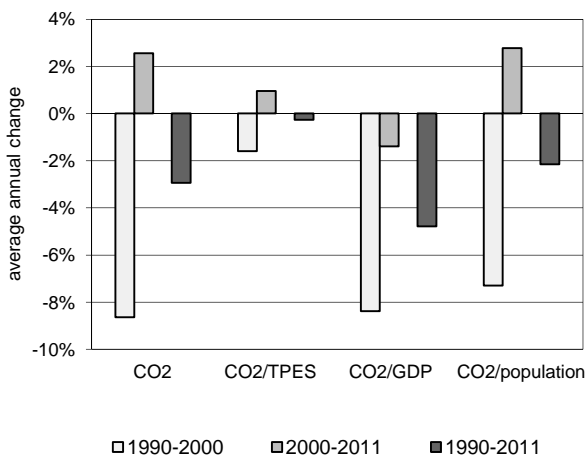
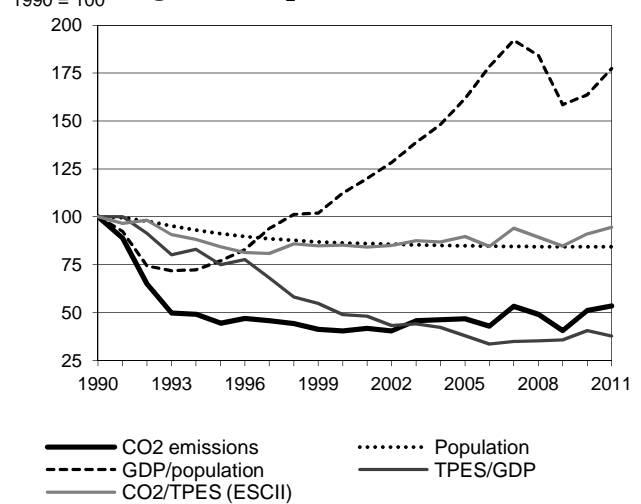


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Estonia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	36.11	16.08	14.62	16.87	14.66	18.47	19.30	-46.5%
TPES (PJ)	415	219	197	216	199	233	235	-43.5%
GDP (billion 2005 USD)	10.13	7.12	9.84	13.90	13.55	14.00	15.16	49.6%
GDP PPP (billion 2005 USD)	16.23	11.40	15.77	22.28	21.71	22.44	24.29	49.6%
Population (millions)	1.59	1.45	1.37	1.35	1.34	1.34	1.34	-15.6%
CO ₂ / TPES (tCO ₂ per TJ)	87.0	73.5	74.1	78.0	73.7	79.3	82.3	-5.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	3.56	2.26	1.49	1.21	1.08	1.32	1.27	-64.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	2.22	1.41	0.93	0.76	0.68	0.82	0.79	-64.3%
CO ₂ / population (tCO ₂ per capita)	22.74	11.10	10.66	12.52	10.94	13.79	14.40	-36.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	45	40	47	41	51	53	-46.5%
Population	100	91	86	85	84	84	84	-15.6%
GDP per population (GDP per capita)	100	77	112	162	158	164	177	77.3%
Energy intensity (TPES/GDP)	100	75	49	38	36	41	38	-62.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	84	85	90	85	91	95	-5.4%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	15.09	3.03	1.18	-	19.30	-46.5%
Main activity producer elec. and heat	14.42	0.13	0.60	-	15.15	-40.4%
Unallocated autoproducers	0.05	0.01	0.08	-	0.14	-73.4%
Other energy industry own use	0.10	0.06	0.03	-	0.19	-59.8%
Manufacturing industries and construction	0.48	0.19	0.27	-	0.93	-79.5%
Transport	-	2.23	-	-	2.23	-5.4%
<i>of which: road</i>	-	2.11	-	-	2.11	-1.6%
Other	0.05	0.41	0.21	-	0.67	-76.3%
<i>of which: residential</i>	0.04	0.03	0.12	-	0.19	-81.8%
Reference Approach	17.78	1.40	1.18	-	20.36	-47.1%
Diff. due to losses and/or transformation	4.15	-1.64	-	-	2.50	
Statistical differences	-1.46	0.01	-0.00	-	-1.45	
<i>Memo: international marine bunkers</i>	-	0.59	-	-	0.59	4.2%
<i>Memo: international aviation bunkers</i>	-	0.10	-	-	0.10	-

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	14.42	-30.1%	65.9	65.9
Road - oil	2.11	-1.6%	9.6	75.5
Main activity prod. elec. and heat - gas	0.60	-66.5%	2.7	78.2
Manufacturing industries - coal/peat	0.48	-70.0%	2.2	80.4
Non-specified other - oil	0.38	-65.3%	1.7	82.2
Manufacturing industries - gas	0.27	-63.7%	1.2	83.4
Manufacturing industries - oil	0.19	-91.5%	0.9	84.2
Main activity prod. elec. and heat - oil	0.13	-95.6%	0.6	84.8
Other transport - oil	0.12	-36.6%	0.6	85.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>19.30</i>	<i>-46.5%</i>	<i>88.2</i>	<i>88.2</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Ethiopia

Figure 1. CO₂ emissions by fuel

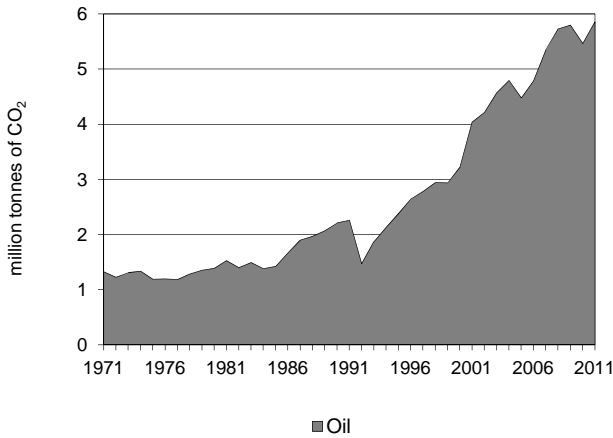


Figure 2. CO₂ emissions by sector

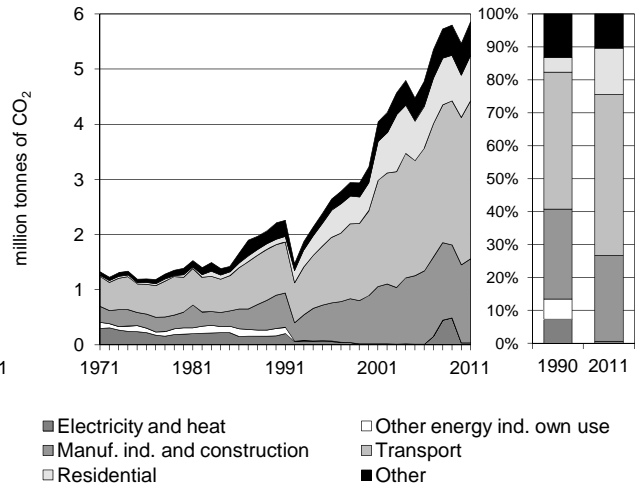


Figure 3. Reference vs Sectoral Approach

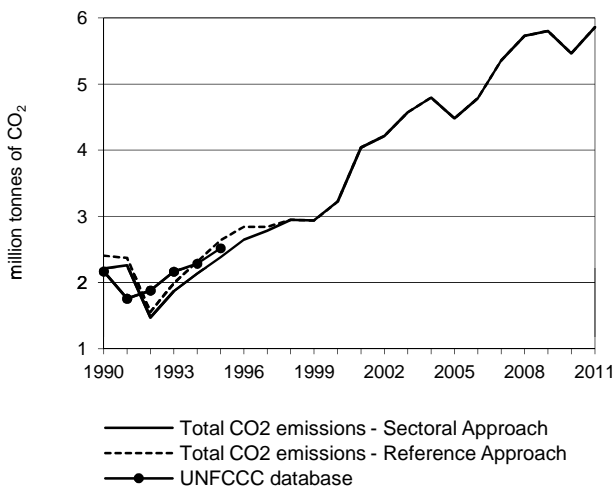


Figure 4. Electricity generation by fuel

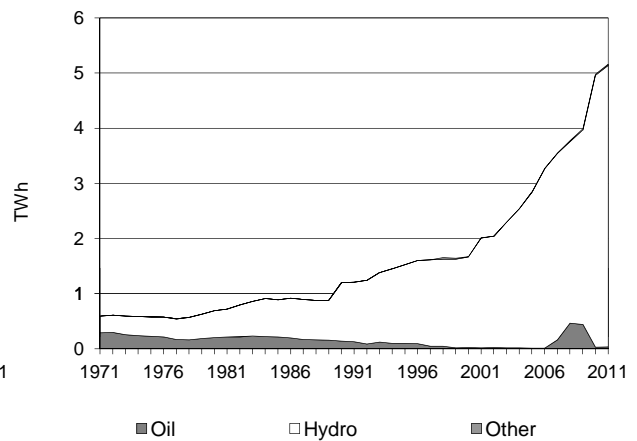


Figure 5. Changes in selected indicators *

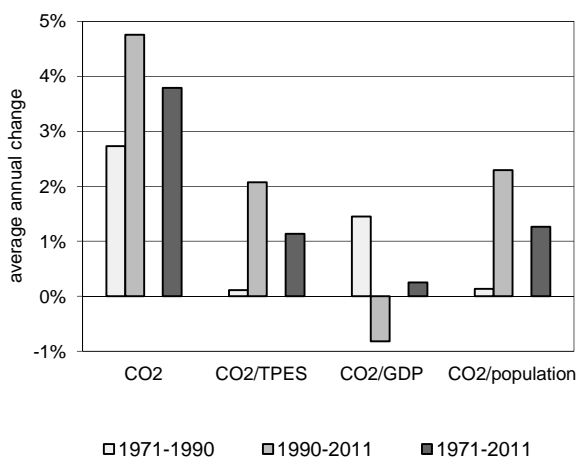
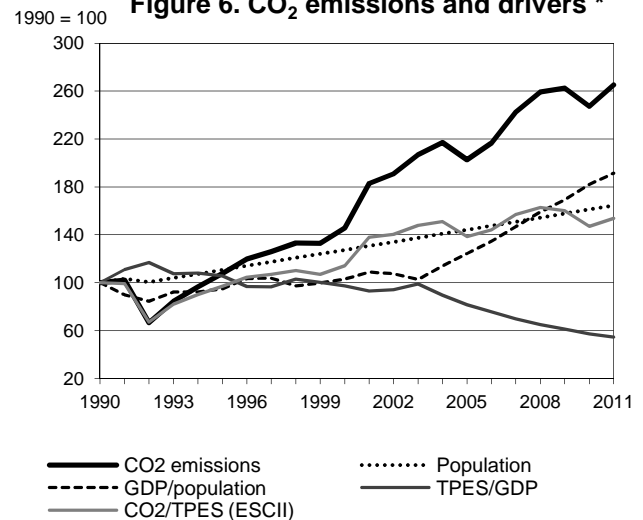


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Ethiopia *

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2.21	2.38	3.22	4.48	5.80	5.46	5.86	165.1%
TPES (PJ)	828	918	1 057	1 211	1 356	1 392	1 426	72.3%
GDP (billion 2005 USD)	6.85	7.20	8.99	12.29	18.29	20.11	21.58	214.9%
GDP PPP (billion 2005 USD)	26.35	27.69	34.58	47.24	70.34	77.33	82.97	214.9%
Population (millions)	51.49	57.04	65.58	74.26	81.19	82.95	84.73	64.6%
CO ₂ / TPES (tCO ₂ per TJ)	2.7	2.6	3.0	3.7	4.3	3.9	4.1	53.9%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.32	0.33	0.36	0.36	0.32	0.27	0.27	-15.8%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.08	0.09	0.09	0.09	0.08	0.07	0.07	-15.9%
CO ₂ / population (tCO ₂ per capita)	0.04	0.04	0.05	0.06	0.07	0.07	0.07	61.1%
CO₂ emissions and drivers - Kaya decomposition (1990=100) **								
CO ₂ emissions	100	108	146	203	262	247	265	165.1%
Population	100	111	127	144	158	161	165	64.6%
GDP per population (GDP per capita)	100	95	103	124	169	182	191	91.3%
Energy intensity (TPES/GDP)	100	106	97	82	61	57	55	-45.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	97	114	138	160	147	154	53.9%

* Data for Ethiopia include Eritrea until 1991. ** Please see Part I, Chapter 1 for methodological notes. Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 90-11
Sectoral Approach	-	5.86	-	-	5.86	165.1%
Main activity producer elec. and heat	-	0.04	-	-	0.04	-57.7%
Unallocated autoproducers
Other energy industry own use	-	-	-	-	-	-100.0%
Manufacturing industries and construction	-	1.52	-	-	1.52	153.0%
Transport	-	2.87	-	-	2.87	212.2%
<i>of which: road</i>	-	2.87	-	-	2.87	212.2%
Other	-	1.43	-	-	1.43	266.5%
<i>of which: residential</i>	-	0.82	-	-	0.82	735.9%
Reference Approach	-	5.86	-	-	5.86	143.8%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	-	-	-	-	-
<i>Memo: international marine bunkers</i>	-	..	-	-
<i>Memo: international aviation bunkers</i>	-	1.08	-	-	1.08	104.3%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	2.87	212.2%	2.6	2.6
Manufacturing industries - oil	1.52	153.0%	1.4	3.9
Residential - oil	0.82	735.9%	0.7	4.6
Non-specified other - oil	0.61	108.7%	0.5	5.2
Main activity prod. elec. and heat - oil	0.04	-57.7%	0.0	5.2
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	5.86	165.1%	5.2	5.2

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Finland

Figure 1. CO₂ emissions by fuel

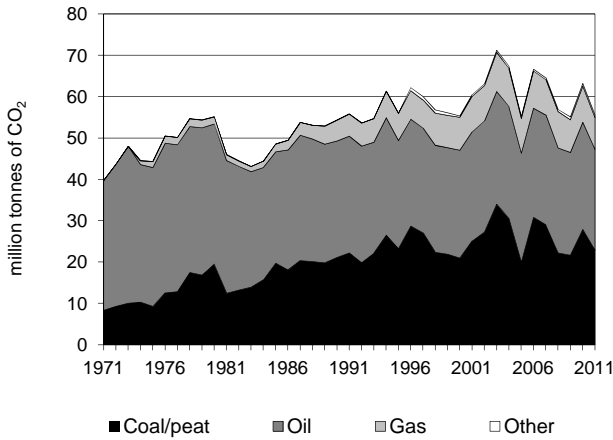


Figure 2. CO₂ emissions by sector

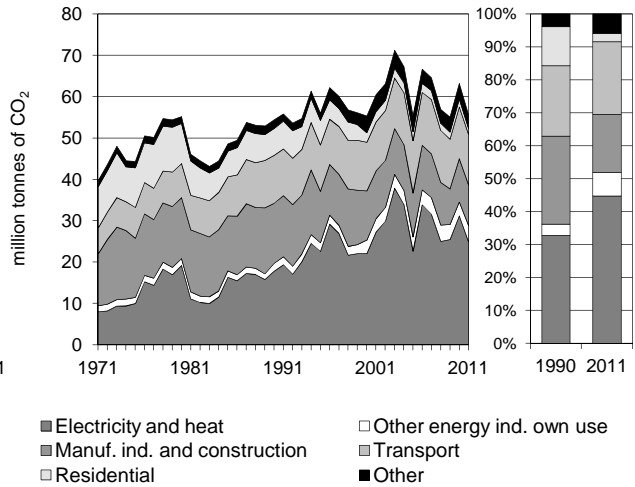


Figure 3. Reference vs Sectoral Approach

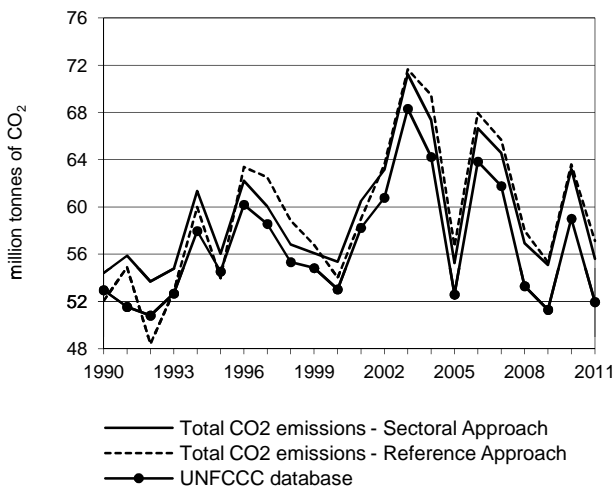


Figure 4. Electricity generation by fuel

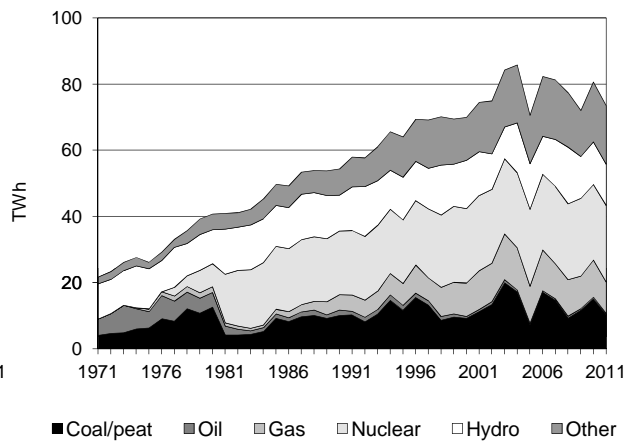


Figure 5. Changes in selected indicators *

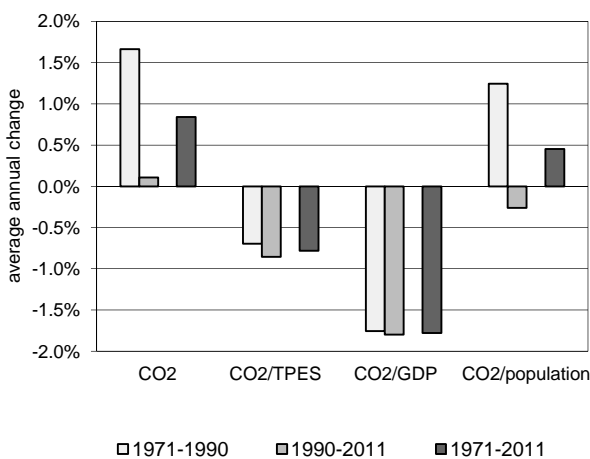
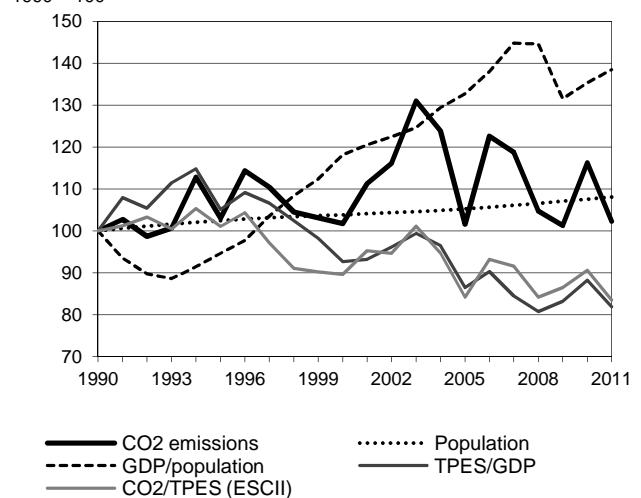


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Finland

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	54.40	56.02	55.35	55.25	55.09	63.22	55.61	2.2%
TPES (PJ)	1 188	1 211	1 350	1 435	1 392	1 525	1 455	22.4%
GDP (billion 2005 USD)	140.23	135.99	171.94	195.78	197.51	204.08	209.75	49.6%
GDP PPP (billion 2005 USD)	115.39	111.90	141.48	161.10	162.52	167.93	172.59	49.6%
Population (millions)	4.99	5.11	5.18	5.25	5.34	5.36	5.39	8.0%
CO ₂ / TPES (tCO ₂ per TJ)	45.8	46.3	41.0	38.5	39.6	41.4	38.2	-16.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.39	0.41	0.32	0.28	0.28	0.31	0.27	-31.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.47	0.50	0.39	0.34	0.34	0.38	0.32	-31.7%
CO ₂ / population (tCO ₂ per capita)	10.91	10.97	10.69	10.53	10.32	11.79	10.32	-5.4%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	103	102	102	101	116	102	2.2%
Population	100	102	104	105	107	108	108	8.0%
GDP per population (GDP per capita)	100	95	118	133	132	135	138	38.4%
Energy intensity (TPES/GDP)	100	105	93	86	83	88	82	-18.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	101	90	84	86	91	83	-16.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	22.91	24.39	7.65	0.66	55.61	2.2%
Main activity producer elec. and heat	16.57	0.91	4.15	0.32	21.96	40.0%
Unallocated autoproducers	2.00	0.15	0.61	0.18	2.94	36.8%
Other energy industry own use	1.16	2.03	0.75	-	3.94	109.1%
Manufacturing industries and construction	2.93	4.79	1.95	0.15	9.82	-32.4%
Transport	-	12.24	0.03	-	12.27	5.8%
<i>of which: road</i>	-	11.25	0.01	-	11.25	5.6%
Other	0.25	4.27	0.17	0.01	4.69	-45.1%
<i>of which: residential</i>	0.04	1.28	0.07	-	1.39	-78.5%
Reference Approach	23.14	25.67	7.65	0.66	57.12	9.7%
Diff. due to losses and/or transformation	-0.04	0.13	-	-	0.09	
Statistical differences	0.27	1.15	0.00	-0.00	1.42	
<i>Memo: international marine bunkers</i>	-	0.63	-	-	0.63	-64.9%
<i>Memo: international aviation bunkers</i>	-	1.88	-	-	1.88	92.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	16.57	33.3%	23.4	23.4
Road - oil	11.25	5.6%	15.9	39.4
Manufacturing industries - oil	4.79	-6.1%	6.8	46.1
Main activity prod. elec. and heat - gas	4.15	113.1%	5.9	52.0
Non-specified other - oil	2.99	45.1%	4.2	56.2
Manufacturing industries - coal/peat	2.93	-59.6%	4.1	60.4
Other energy industry own use - oil	2.03	49.4%	2.9	63.3
Unallocated autoproducers - coal/peat	2.00	49.0%	2.8	66.1
Manufacturing industries - gas	1.95	-10.3%	2.8	68.8
<i>Memo: total CO₂ from fuel combustion</i>	<i>55.61</i>	<i>2.2%</i>	<i>78.7</i>	<i>78.7</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

France

Figure 1. CO₂ emissions by fuel

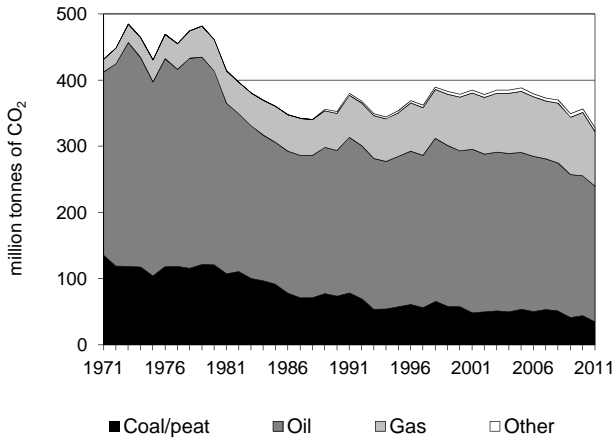


Figure 2. CO₂ emissions by sector

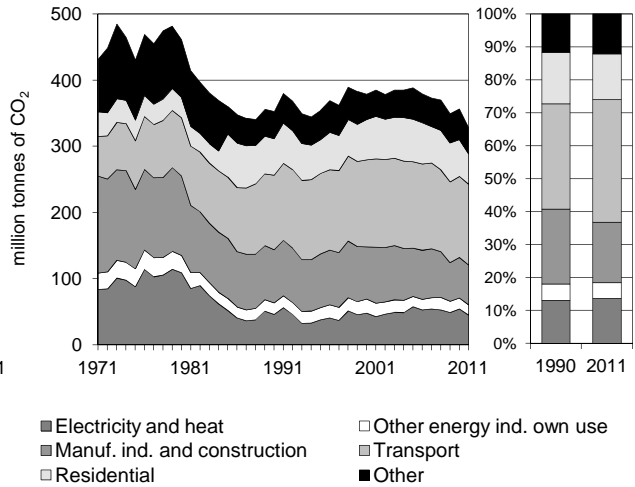


Figure 3. Reference vs Sectoral Approach

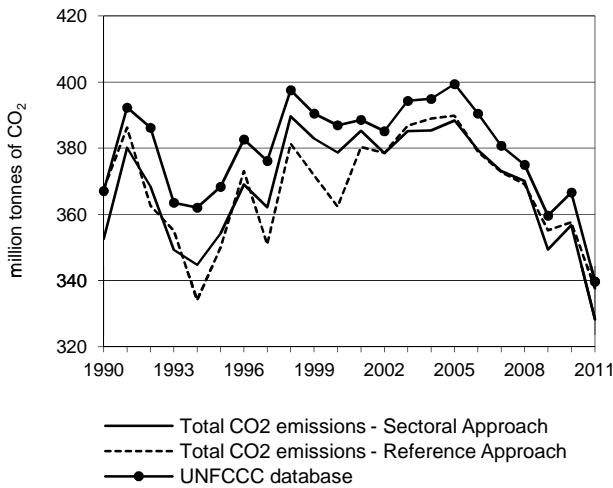


Figure 4. Electricity generation by fuel

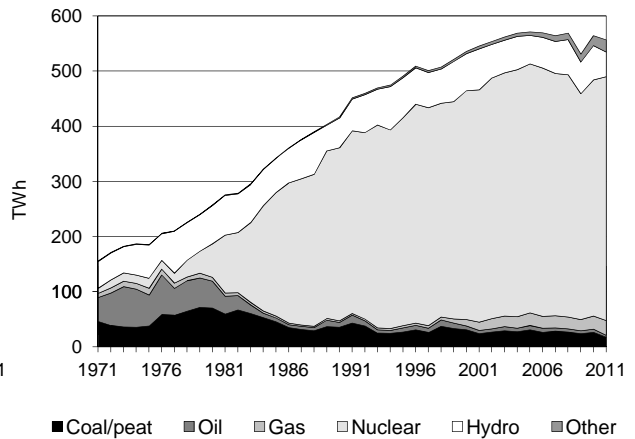


Figure 5. Changes in selected indicators *

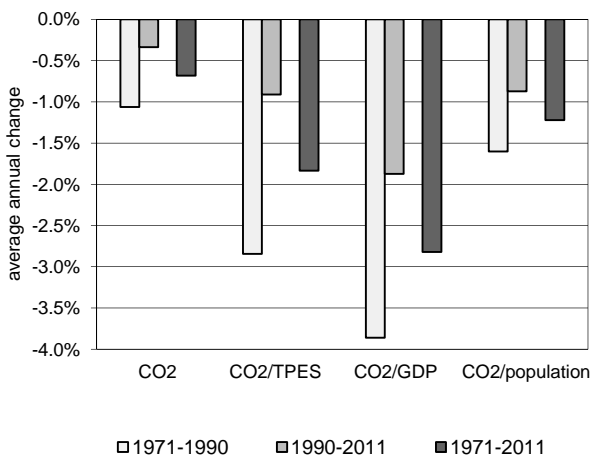
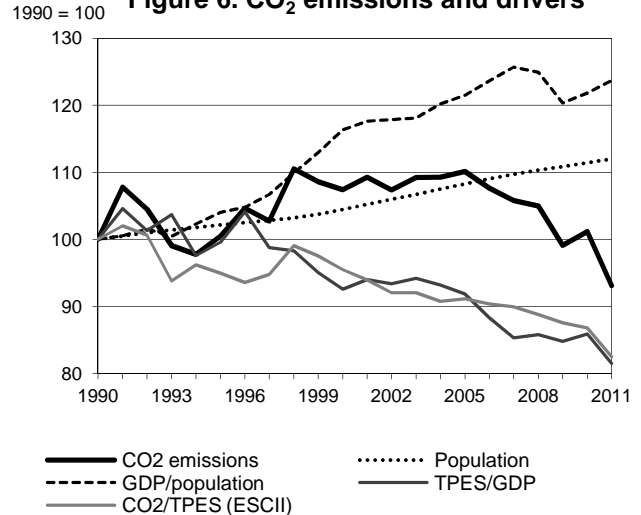


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

France

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	352.57	354.24	378.68	388.33	349.38	356.70	328.31	-6.9%
TPES (PJ)	9 378	9 925	10 550	11 332	10 612	10 934	10 585	12.9%
GDP (billion 2005 USD)	1 623.84	1 725.64	1 973.04	2 136.56	2 167.07	2 204.45	2 249.13	38.5%
GDP PPP (billion 2005 USD)	1 414.18	1 502.84	1 718.30	1 860.70	1 887.27	1 919.83	1 958.74	38.5%
Population (millions)	58.14	59.38	60.73	62.96	64.46	64.78	65.12	12.0%
CO ₂ / TPES (tCO ₂ per TJ)	37.6	35.7	35.9	34.3	32.9	32.6	31.0	-17.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.22	0.21	0.19	0.18	0.16	0.16	0.15	-32.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.25	0.24	0.22	0.21	0.19	0.19	0.17	-32.8%
CO ₂ / population (tCO ₂ per capita)	6.06	5.97	6.24	6.17	5.42	5.51	5.04	-16.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	100	107	110	99	101	93	-6.9%
Population	100	102	104	108	111	111	112	12.0%
GDP per population (GDP per capita)	100	104	116	122	120	122	124	23.7%
Energy intensity (TPES/GDP)	100	100	93	92	85	86	81	-18.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	95	91	88	87	83	-17.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	35.14	204.60	82.92	5.65	328.31	-6.9%
Main activity producer elec. and heat	14.49	2.02	15.39	0.21	32.10	30.3%
Unallocated autoproducers	3.17	2.63	3.00	4.12	12.91	-39.9%
Other energy industry own use	2.71	11.65	1.07	-	15.43	-11.6%
Manufacturing industries and construction	13.57	24.59	22.21	-	60.37	-24.6%
Transport	-	121.99	0.12	-	122.11	8.3%
<i>of which: road</i>	-	117.09	0.11	-	117.21	8.8%
Other	1.21	41.72	41.13	1.32	85.38	-11.2%
<i>of which: residential</i>	0.67	18.55	26.35	-	45.58	-17.0%
Reference Approach	40.18	206.33	85.48	5.65	337.64	-8.2%
Diff. due to losses and/or transformation	2.42	-2.32	2.57	-	2.67	
Statistical differences	2.61	4.05	-0.00	-	6.66	
<i>Memo: international marine bunkers</i>	-	7.84	-	-	7.84	1.6%
<i>Memo: international aviation bunkers</i>	-	17.19	-	-	17.19	84.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	117.09	8.7%	24.4	24.4
Residential - gas ****	26.35	71.2%	5.5	29.9
Manufacturing industries - oil	24.59	-11.5%	5.1	35.0
Non-specified other - oil	23.17	-12.3%	4.8	39.8
Manufacturing industries - gas	22.21	-9.2%	4.6	44.5
Residential - oil	18.55	-43.8%	3.9	48.3
Main activity prod. elec. and heat - gas ****	15.39	+	3.2	51.5
Non-specified other - gas	14.78	1.4%	3.1	54.6
Main activity prod. elec. and heat - coal/peat	14.49	-30.7%	3.0	57.6
<i>Memo: total CO₂ from fuel combustion</i>	<i>328.31</i>	<i>-6.9%</i>	<i>68.4</i>	<i>68.4</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

**** The high growth in gas is also due to changes in methodology in 2000.

Gabon

Figure 1. CO₂ emissions by fuel

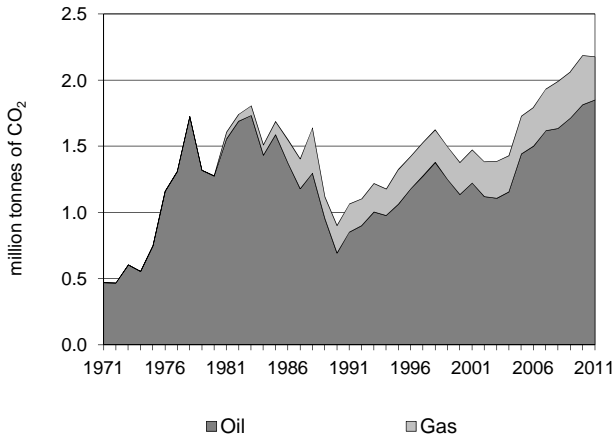


Figure 2. CO₂ emissions by sector

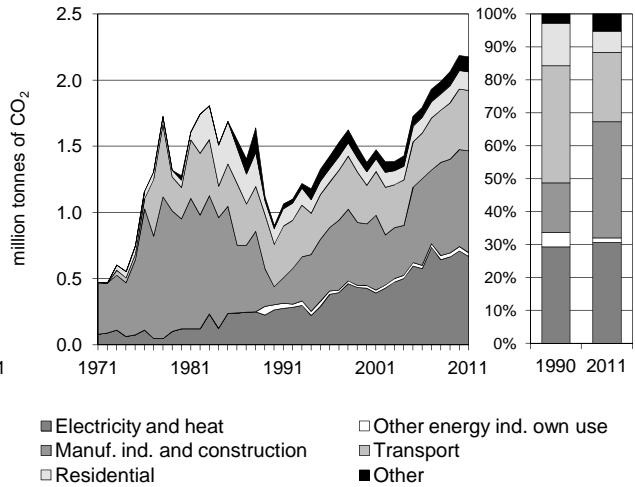


Figure 3. Reference vs Sectoral Approach

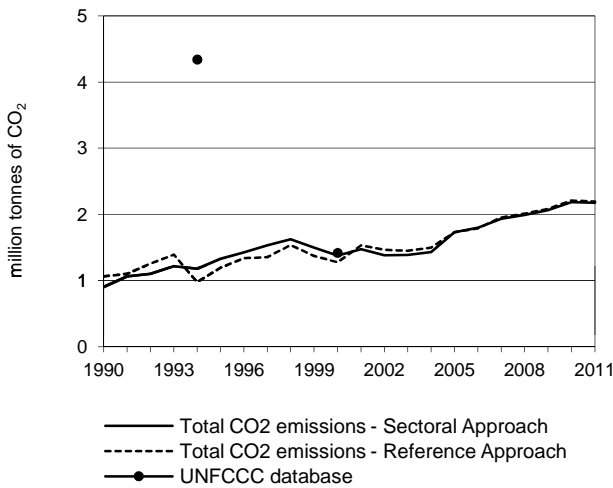


Figure 4. Electricity generation by fuel

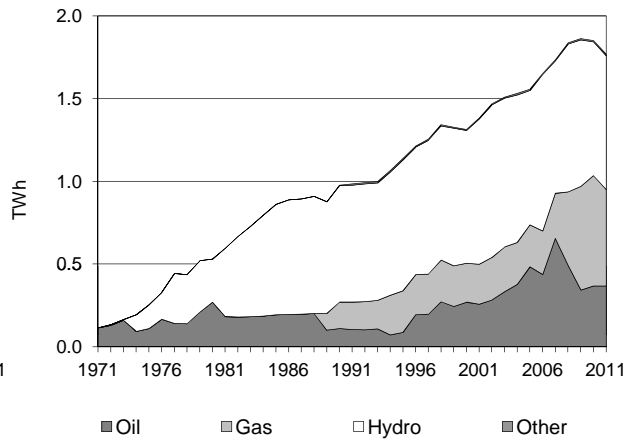


Figure 5. Changes in selected indicators *

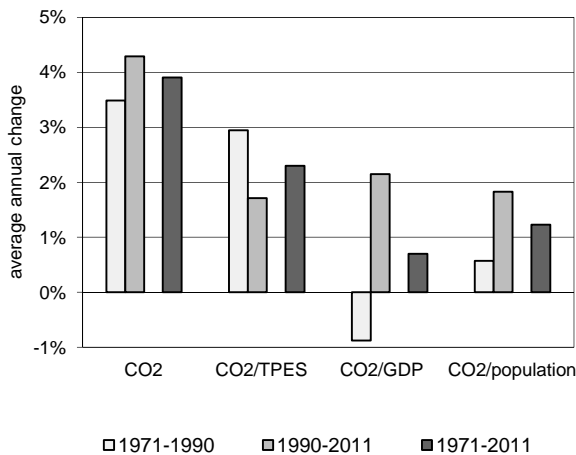
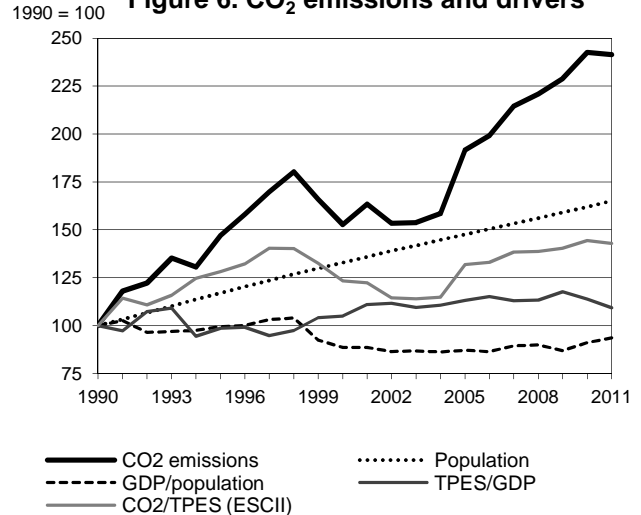


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Gabon

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	0.90	1.33	1.38	1.73	2.06	2.19	2.18	141.4%
TPES (PJ)	49	57	61	72	81	83	84	69.0%
GDP (billion 2005 USD)	6.74	7.85	7.95	8.67	9.34	9.95	10.43	54.7%
GDP PPP (billion 2005 USD)	13.88	16.16	16.37	17.84	19.22	20.49	21.48	54.7%
Population (millions)	0.93	1.09	1.24	1.37	1.48	1.51	1.53	65.1%
CO ₂ / TPES (tCO ₂ per TJ)	18.2	23.4	22.5	24.0	25.6	26.3	26.0	42.9%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.13	0.17	0.17	0.20	0.22	0.22	0.21	56.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.06	0.08	0.08	0.10	0.11	0.11	0.10	56.2%
CO ₂ / population (tCO ₂ per capita)	0.97	1.22	1.12	1.26	1.40	1.45	1.42	46.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	147	153	192	229	243	241	141.4%
Population	100	117	133	148	159	162	165	65.1%
GDP per population (GDP per capita)	100	99	89	87	87	91	94	-6.3%
Energy intensity (TPES/GDP)	100	99	105	113	118	114	109	9.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	128	123	132	140	144	143	42.9%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	1.85	0.33	-	2.18	141.4%
Main activity producer elec. and heat	-	0.27	0.22	-	0.50	141.3%
Unallocated autoproducers	-	0.10	0.07	-	0.17	193.7%
Other energy industry own use	-	-	0.03	-	0.03	-26.2%
Manufacturing industries and construction	-	0.76	0.00	-	0.77	464.0%
Transport	-	0.46	-	-	0.46	43.1%
<i>of which: road</i>	-	0.46	-	-	0.46	43.1%
Other	-	0.25	-	-	0.25	78.2%
<i>of which: residential</i>	-	0.14	-	-	0.14	19.1%
Reference Approach	-	1.87	0.33	-	2.20	106.3%
Diff. due to losses and/or transformation	-	0.02	-	-	0.02	
Statistical differences	-	0.00	0.00	-	0.00	
<i>Memo: international marine bunkers</i>	-	0.67	-	-	0.67	745.6%
<i>Memo: international aviation bunkers</i>	-	0.19	-	-	0.19	-3.6%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Manufacturing industries - oil	0.76	473.5%	7.8	7.8
Road - oil	0.46	43.1%	4.7	12.5
Main activity prod. elec. and heat - oil	0.27	231.0%	2.8	15.3
Main activity prod. elec. and heat - gas	0.22	81.4%	2.3	17.6
Residential - oil	0.14	19.1%	1.4	19.0
Non-specified other - oil	0.11	350.0%	1.2	20.2
Unallocated autoproducers - oil	0.10	540.0%	1.0	21.2
Unallocated autoproducers - gas	0.07	63.3%	0.7	21.9
Other energy industry own use - gas	0.03	-26.2%	0.3	22.2
<i>Memo: total CO₂ from fuel combustion</i>	<i>2.18</i>	<i>141.4%</i>	<i>22.3</i>	<i>22.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Georgia

Figure 1. CO₂ emissions by fuel

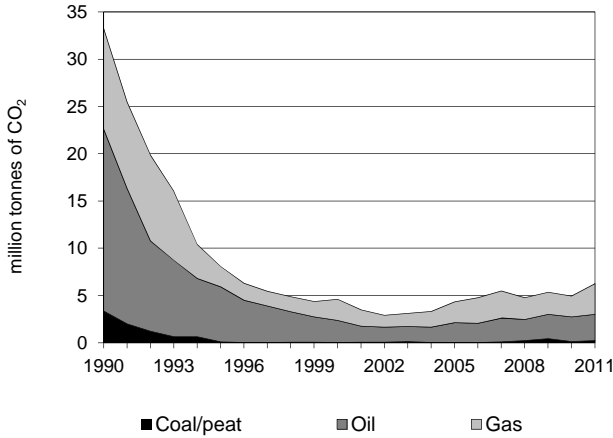


Figure 2. CO₂ emissions by sector

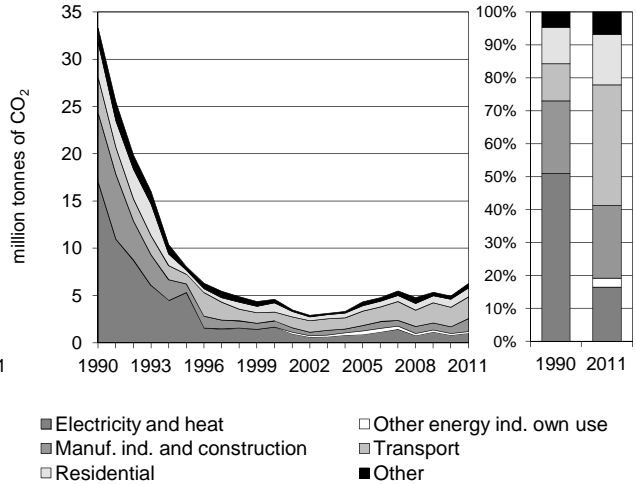


Figure 3. Reference vs Sectoral Approach

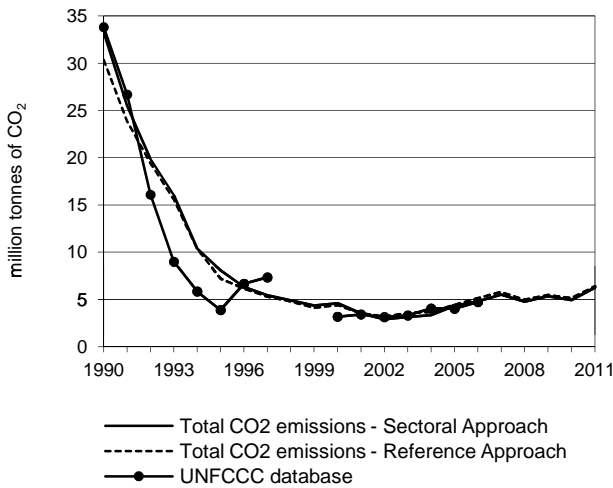


Figure 4. Electricity generation by fuel

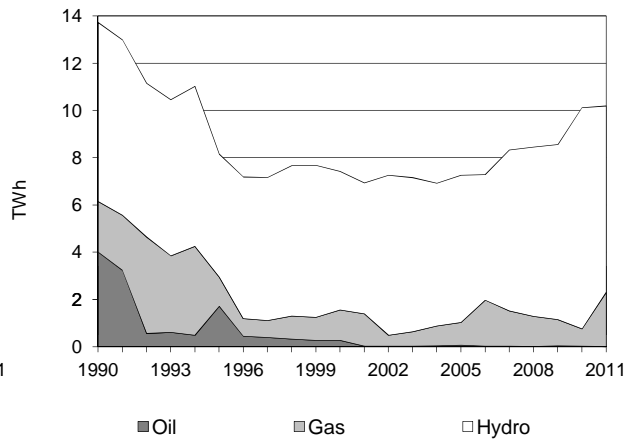


Figure 5. Changes in selected indicators *

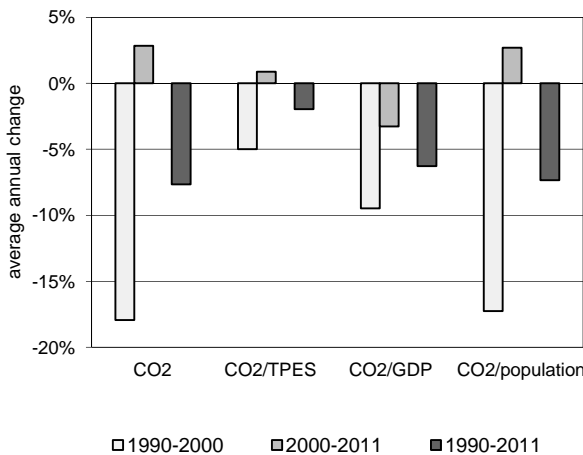
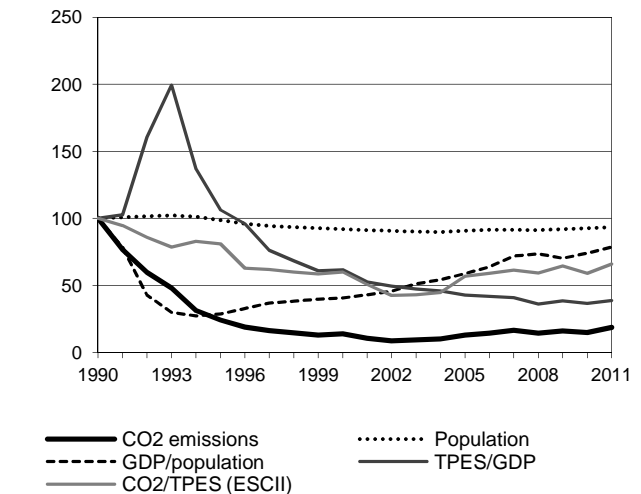


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Georgia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	33.25	8.08	4.61	4.33	5.35	4.94	6.26	-81.2%
TPES (PJ)	520	156	120	119	130	131	148	-71.5%
GDP (billion 2005 USD)	12.00	3.39	4.50	6.41	7.76	8.24	8.81	-26.6%
GDP PPP (billion 2005 USD)	29.48	8.33	11.06	15.75	19.05	20.24	21.65	-26.5%
Population (millions)	4.80	4.73	4.42	4.36	4.41	4.45	4.49	-6.6%
CO ₂ / TPES (tCO ₂ per TJ)	64.0	51.8	38.3	36.4	41.3	37.8	42.2	-34.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	2.77	2.38	1.02	0.68	0.69	0.60	0.71	-74.4%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.13	0.97	0.42	0.28	0.28	0.24	0.29	-74.4%
CO ₂ / population (tCO ₂ per capita)	6.92	1.71	1.04	0.99	1.21	1.11	1.40	-79.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	24	14	13	16	15	19	-81.2%
Population	100	99	92	91	92	93	93	-6.6%
GDP per population (GDP per capita)	100	29	41	59	70	74	79	-21.4%
Energy intensity (TPES/GDP)	100	106	62	43	39	37	39	-61.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	81	60	57	65	59	66	-34.0%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.25	2.78	3.23	-	6.26	-81.2%
Main activity producer elec. and heat	-	0.04	1.00	-	1.03	-93.9%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	-	0.17	-	0.17	x
Manufacturing industries and construction	0.22	0.10	1.07	-	1.38	-81.2%
Transport	-	2.26	0.03	-	2.29	-39.1%
<i>of which: road</i>	-	2.20	0.02	-	2.23	-35.7%
Other	0.03	0.39	0.97	-	1.39	-73.4%
<i>of which: residential</i>	-	0.15	0.81	-	0.96	-73.8%
Reference Approach	0.25	2.78	3.35	-	6.38	-79.0%
Diff. due to losses and/or transformation	-	-	0.12	-	0.12	
Statistical differences	0.00	-0.00	0.00	-	0.00	
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.11	-	-	0.11	-82.2%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	2.20	-36.3%	16.0	16.0
Manufacturing industries - gas	1.07	-65.3%	7.7	23.7
Main activity prod. elec. and heat - gas	1.00	-78.2%	7.2	31.0
Residential - gas	0.81	-69.1%	5.9	36.8
Non-specified other - oil	0.24	-79.0%	1.7	38.6
Manufacturing industries - coal/peat	0.22	-90.1%	1.6	40.1
Other energy industry own use - gas	0.17	x	1.2	41.3
Non-specified other - gas	0.16	-46.5%	1.2	42.5
Residential - oil	0.15	-84.5%	1.1	43.6
<i>Memo: total CO₂ from fuel combustion</i>	<i>6.26</i>	<i>-81.2%</i>	<i>45.4</i>	<i>45.4</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Germany

Figure 1. CO₂ emissions by fuel

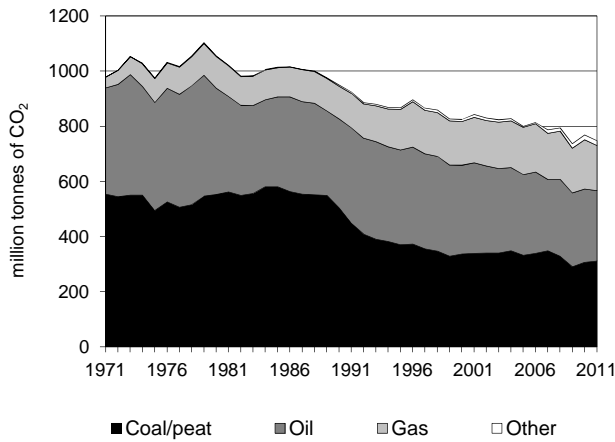


Figure 2. CO₂ emissions by sector

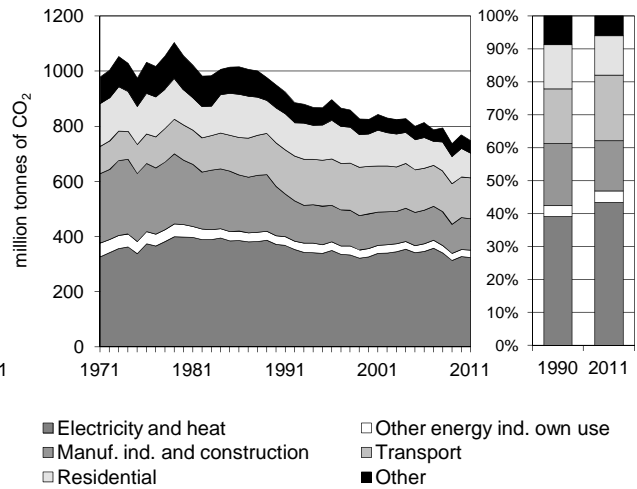


Figure 3. Reference vs Sectoral Approach

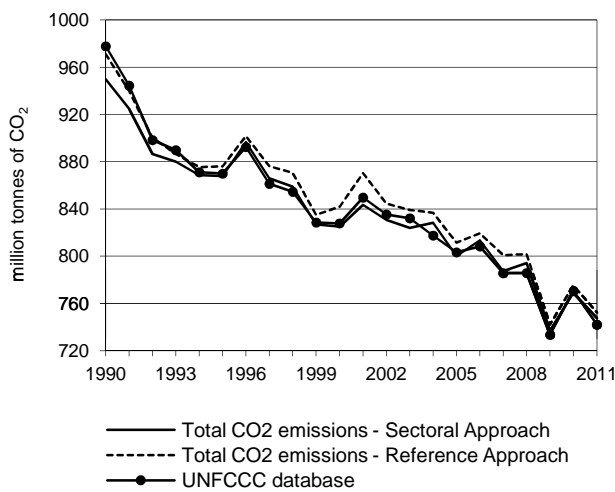


Figure 4. Electricity generation by fuel

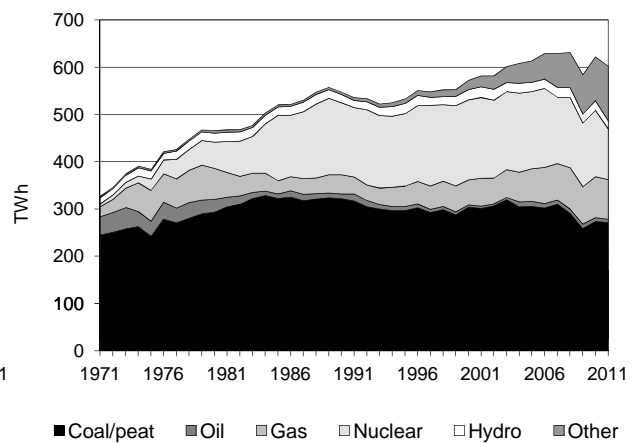


Figure 5. Changes in selected indicators *

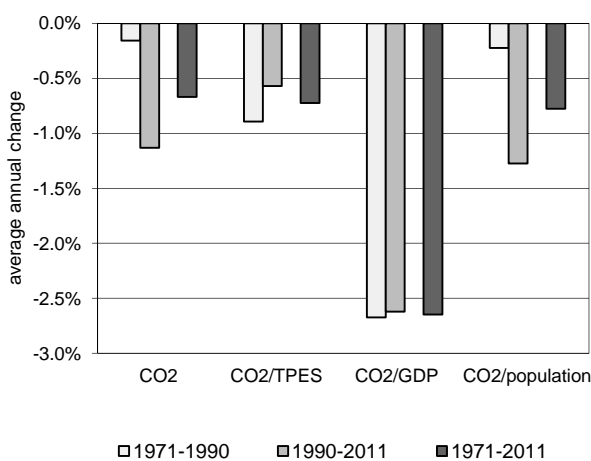
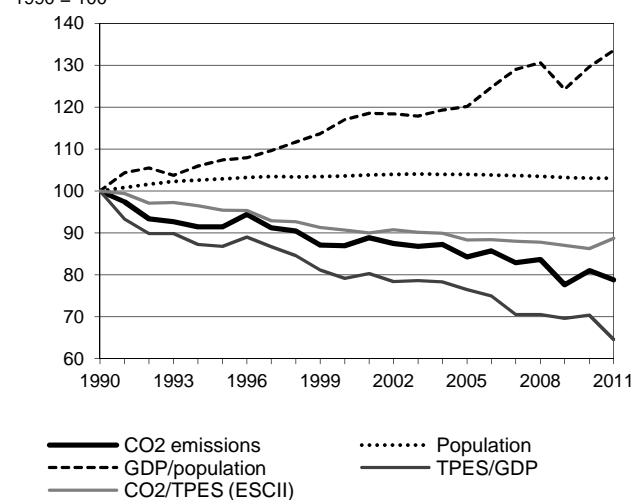


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Germany

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	949.66	867.81	825.04	800.20	736.99	768.96	747.58	-21.3%
TPES (PJ)	14 702	14 089	14 092	14 034	13 115	13 807	13 053	-11.2%
GDP (billion 2005 USD)	2 216.25	2 448.69	2 685.20	2 766.25	2 840.94	2 959.06	3 048.69	37.6%
GDP PPP (billion 2005 USD)	2 055.81	2 271.42	2 490.81	2 566.00	2 635.28	2 744.85	2 827.99	37.6%
Population (millions)	79.36	81.66	82.19	82.46	81.88	81.76	81.78	3.0%
CO ₂ / TPES (tCO ₂ per TJ)	64.6	61.6	58.5	57.0	56.2	55.7	57.3	-11.3%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.43	0.35	0.31	0.29	0.26	0.26	0.25	-42.8%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.46	0.38	0.33	0.31	0.28	0.28	0.26	-42.8%
CO ₂ / population (tCO ₂ per capita)	11.97	10.63	10.04	9.70	9.00	9.41	9.14	-23.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	91	87	84	78	81	79	-21.3%
Population	100	103	104	104	103	103	103	3.0%
GDP per population (GDP per capita)	100	107	117	120	124	130	133	33.5%
Energy intensity (TPES/GDP)	100	87	79	76	70	70	65	-35.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	91	88	87	86	89	-11.3%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	311.10	255.85	163.03	17.60	747.58	-21.3%
Main activity producer elec. and heat	241.06	1.76	35.03	13.14	290.99	-5.9%
Unallocated autoproducers	22.54	2.72	7.89	0.34	33.49	-46.2%
Other energy industry own use	6.40	17.33	2.31	-	26.03	-16.4%
Manufacturing industries and construction	34.76	27.28	47.99	4.11	114.15	-36.3%
Transport	-	147.22	1.52	-	148.74	-5.6%
<i>of which: road</i>	-	142.65	0.49	-	143.14	-3.7%
Other	6.35	59.54	68.29	0.01	134.18	-36.2%
<i>of which: residential</i>	4.91	36.99	47.05	-	88.95	-30.1%
Reference Approach	310.17	263.94	160.82	17.60	752.52	-22.5%
Diff. due to losses and/or transformation	1.23	9.36	-	-	10.60	
Statistical differences	- 2.16	- 1.28	- 2.21	- 0.00	- 5.65	
<i>Memo: international marine bunkers</i>	-	8.57	-	-	8.57	10.0%
<i>Memo: international aviation bunkers</i>	-	23.14	-	-	23.14	73.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	241.06	-14.0%	26.1	26.1
Road - oil	142.65	-4.0%	15.5	41.6
Manufacturing industries - gas	47.99	10.7%	5.2	46.8
Residential - gas	47.05	50.2%	5.1	51.9
Residential - oil	36.99	-33.1%	4.0	55.9
Main activity prod. elec. and heat - gas	35.03	89.8%	3.8	59.7
Manufacturing industries - coal/peat	34.76	-63.0%	3.8	63.5
Manufacturing industries - oil	27.28	-35.1%	3.0	66.5
Non-specified other - oil	22.55	-43.0%	2.4	68.9
<i>Memo: total CO₂ from fuel combustion</i>	<i>747.58</i>	<i>-21.3%</i>	<i>81.1</i>	<i>81.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Ghana

Figure 1. CO₂ emissions by fuel

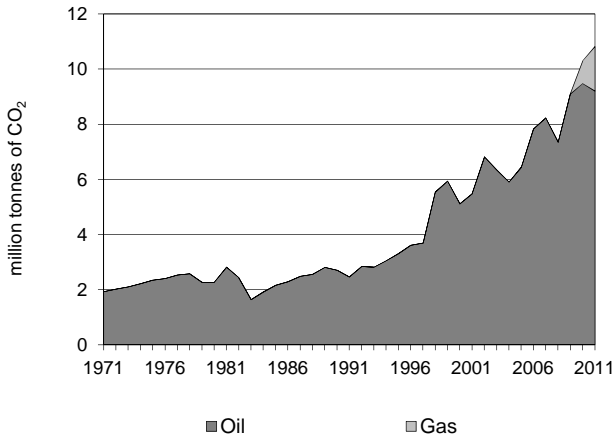


Figure 2. CO₂ emissions by sector

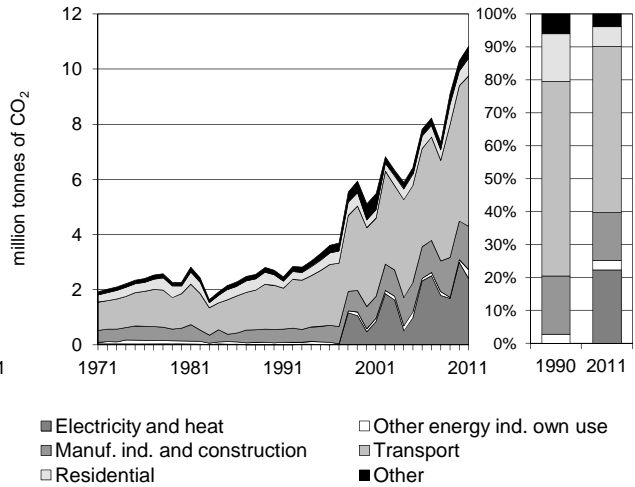


Figure 3. Reference vs Sectoral Approach

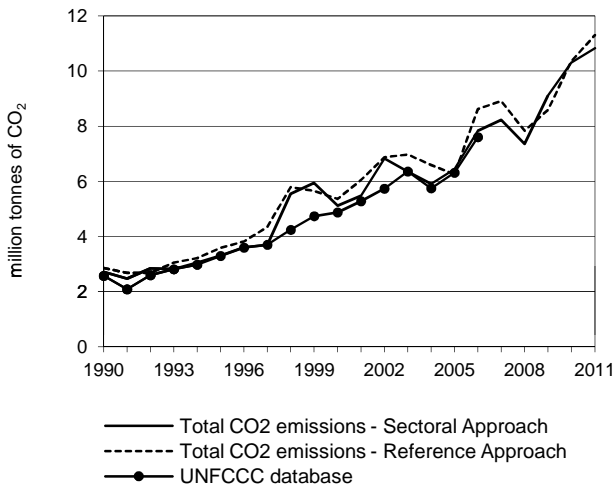


Figure 4. Electricity generation by fuel

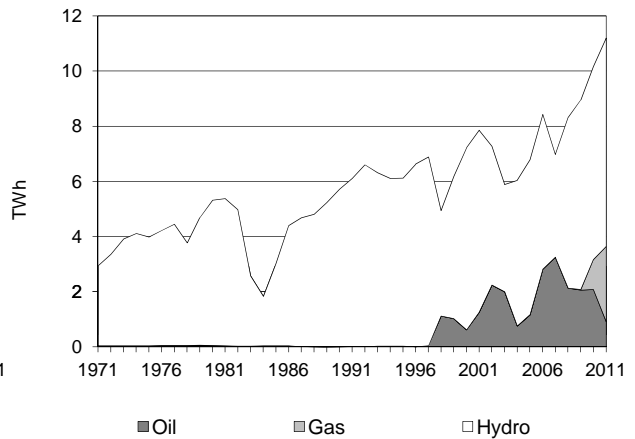


Figure 5. Changes in selected indicators *

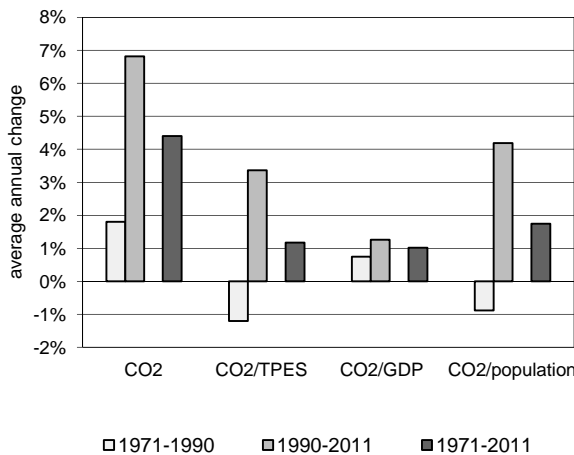
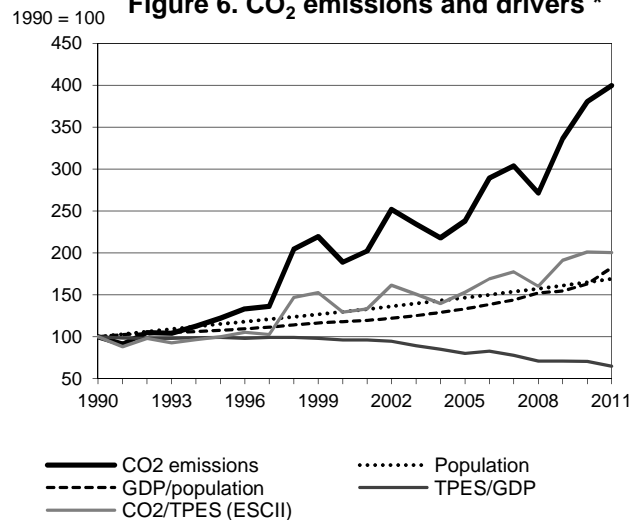


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Ghana

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2.71	3.31	5.11	6.44	9.11	10.31	10.82	299.4%
TPES (PJ)	222	271	324	345	390	419	442	99.4%
GDP (billion 2005 USD)	5.51	6.79	8.39	10.73	13.71	14.81	16.94	207.4%
GDP PPP (billion 2005 USD)	13.42	16.55	20.45	26.14	33.39	36.06	41.25	207.4%
Population (millions)	14.79	17.00	19.17	21.64	23.82	24.39	24.97	68.8%
CO ₂ / TPES (tCO ₂ per TJ)	12.2	12.2	15.8	18.7	23.3	24.6	24.5	100.3%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.49	0.49	0.61	0.60	0.66	0.70	0.64	29.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.20	0.20	0.25	0.25	0.27	0.29	0.26	30.0%
CO ₂ / population (tCO ₂ per capita)	0.18	0.19	0.27	0.30	0.38	0.42	0.43	136.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	122	189	238	336	380	399	299.4%
Population	100	115	130	146	161	165	169	68.8%
GDP per population (GDP per capita)	100	107	118	133	154	163	182	82.2%
Energy intensity (TPES/GDP)	100	99	96	80	71	70	65	-35.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	100	129	153	191	201	200	100.3%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	9.21	1.62	-	10.82	299.4%
Main activity producer elec. and heat	-	0.80	1.62	-	2.41	x
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	0.32	-	-	0.32	316.6%
Manufacturing industries and construction	-	1.57	-	-	1.57	226.2%
Transport	-	5.46	-	-	5.46	241.1%
<i>of which: road</i>	-	5.01	-	-	5.01	230.6%
Other	-	1.07	-	-	1.07	93.3%
<i>of which: residential</i>	-	0.65	-	-	0.65	65.9%
Reference Approach	-	9.69	1.62	-	11.31	297.0%
Diff. due to losses and/or transformation	-	0.54	-	-	0.54	
Statistical differences	-	-0.06	-	-	-0.06	
<i>Memo: international marine bunkers</i>	-	0.40	-	-	0.40	..
<i>Memo: international aviation bunkers</i>	-	0.44	-	-	0.44	218.6%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	5.01	230.6%	10.0	10.0
Main activity prod. elec. and heat - gas	1.62	x	3.2	13.2
Manufacturing industries - oil	1.57	226.2%	3.1	16.3
Main activity prod. elec. and heat - oil	0.80	x	1.6	17.9
Residential - oil	0.65	65.9%	1.3	19.2
Other transport - oil	0.44	434.6%	0.9	20.1
Non-specified other - oil	0.42	159.5%	0.8	20.9
Other energy industry own use - oil	0.32	316.6%	0.6	21.6
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>10.82</i>	<i>299.4%</i>	<i>21.6</i>	<i>21.6</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Gibraltar

Figure 1. CO₂ emissions by fuel

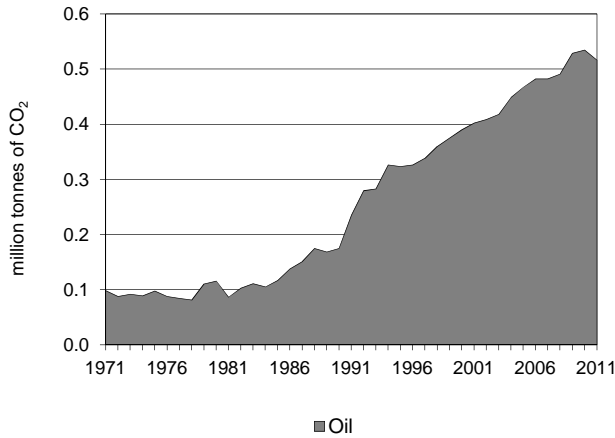


Figure 2. CO₂ emissions by sector

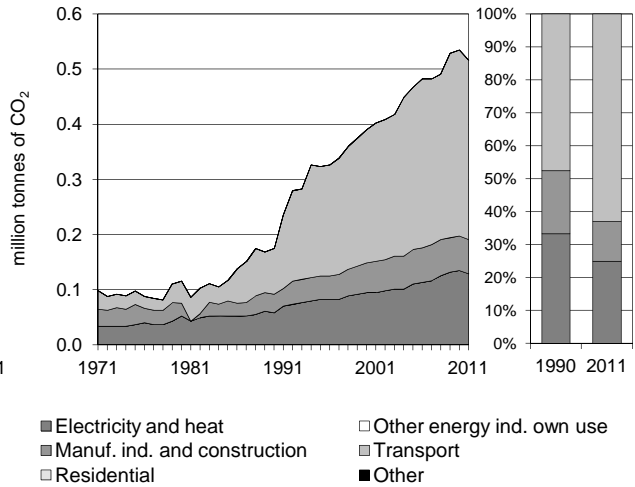


Figure 3. Reference vs Sectoral Approach

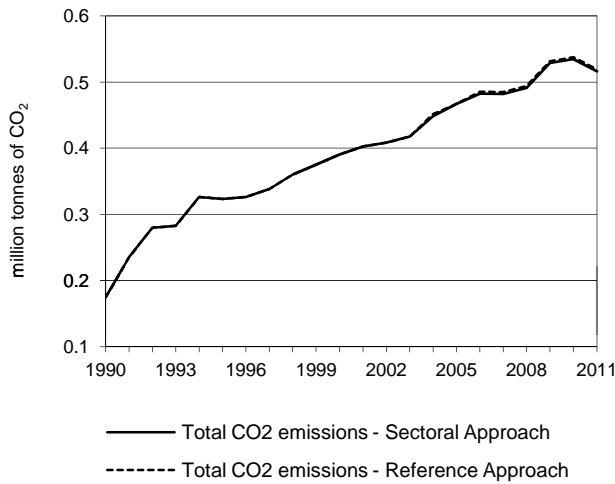


Figure 4. Electricity generation by fuel

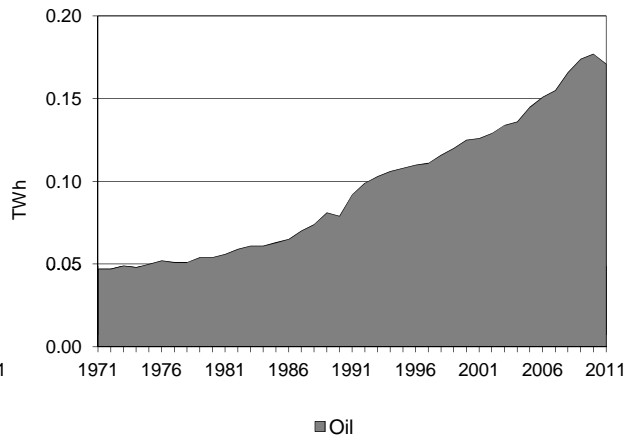


Figure 5. Changes in selected indicators *

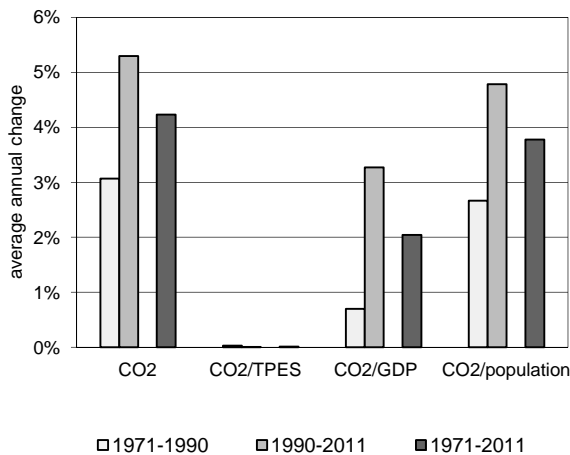
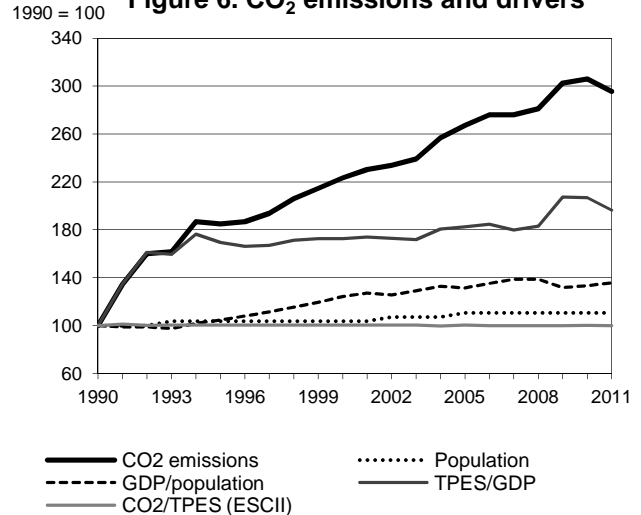


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Gibraltar

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	0.17	0.32	0.39	0.47	0.53	0.53	0.52	195.4%
TPES (PJ)	2	4	5	6	7	7	7	195.3%
GDP (billion 2005 USD)	0.71	0.77	0.91	1.03	1.04	1.05	1.07	50.2%
GDP PPP (billion 2005 USD)	0.58	0.63	0.75	0.84	0.85	0.86	0.87	50.3%
Population (millions)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	10.7%
CO ₂ / TPES (tCO ₂ per TJ)	72.6	72.9	72.9	72.9	72.6	72.6	72.6	0.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.25	0.42	0.43	0.45	0.51	0.51	0.48	96.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.30	0.51	0.52	0.55	0.62	0.62	0.59	96.5%
CO ₂ / population (tCO ₂ per capita)	6.24	11.14	13.46	15.07	17.05	17.25	16.66	166.8%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	185	223	267	302	306	295	195.4%
Population	100	104	104	111	111	111	111	10.7%
GDP per population (GDP per capita)	100	105	124	131	132	133	136	35.8%
Energy intensity (TPES/GDP)	100	169	173	183	207	207	196	96.4%
Carbon intensity: ESCII (CO ₂ /TPES)	100	101	101	101	100	100	100	0.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	0.52	-	-	0.52	195.4%
Main activity producer elec. and heat	-	0.13	-	-	0.13	121.1%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	-	0.06	-	-	0.06	86.7%
Transport	-	0.33	-	-	0.33	291.4%
<i>of which: road</i>	-	0.33	-	-	0.33	291.4%
Other	-	-	-	-	-	-
<i>of which: residential</i>	-	-	-	-	-	-
Reference Approach	-	0.52	-	-	0.52	197.1%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	0.00	-	-	0.00	-
<i>Memo: international marine bunkers</i>	-	8.26	-	-	8.26	499.2%
<i>Memo: international aviation bunkers</i>	-	0.02	-	-	0.02	-

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	0.33	291.4%	60.8	60.8
Main activity prod. elec. and heat - oil	0.13	121.1%	24.1	84.9
Manufacturing industries - oil	0.06	86.7%	11.7	96.6
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>0.52</i>	<i>195.4%</i>	<i>96.6</i>	<i>96.6</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Greece

Figure 1. CO₂ emissions by fuel

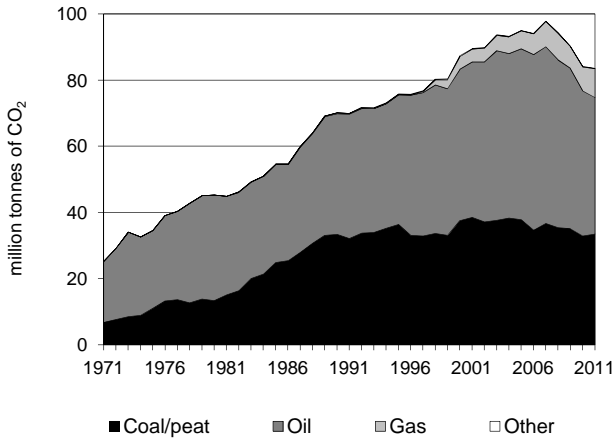


Figure 2. CO₂ emissions by sector

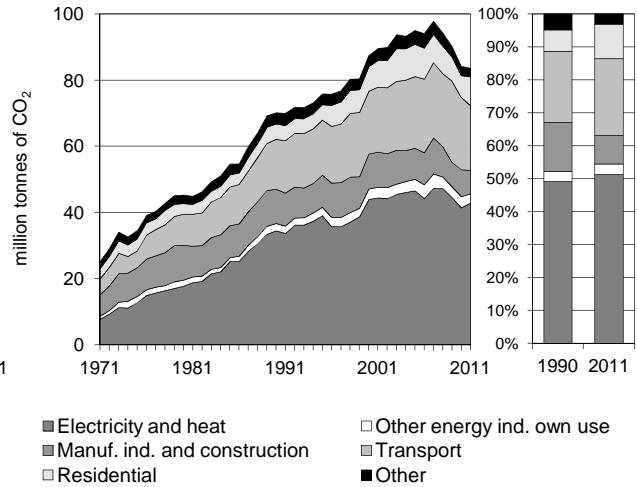


Figure 3. Reference vs Sectoral Approach

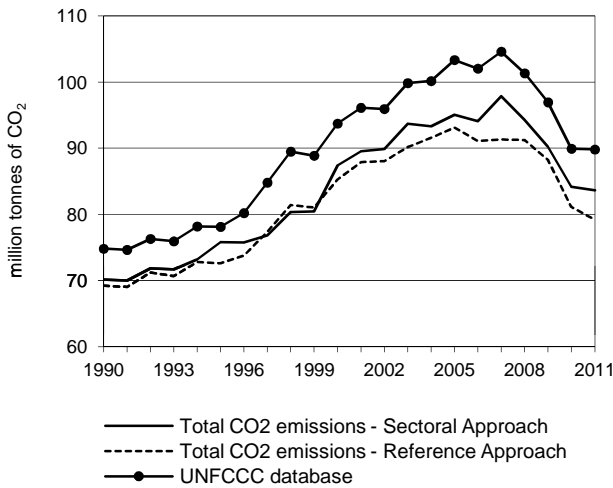


Figure 4. Electricity generation by fuel

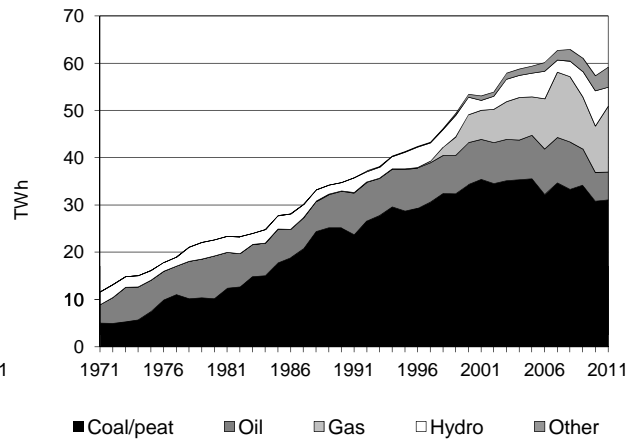


Figure 5. Changes in selected indicators *

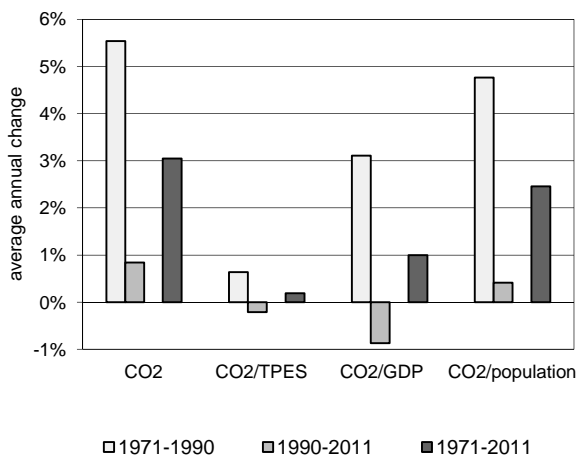
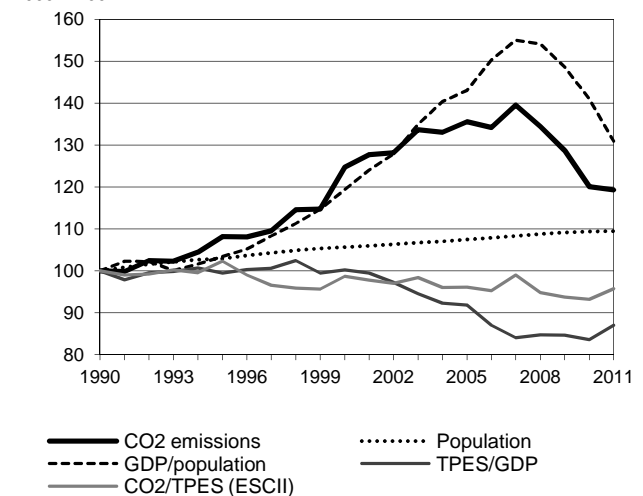


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Greece

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	70.13	75.82	87.43	95.04	90.22	84.17	83.64	19.3%
TPES (PJ)	898	949	1 134	1 266	1 232	1 156	1 119	24.6%
GDP (billion 2005 USD)	156.25	166.24	196.96	240.08	253.48	240.95	223.83	43.2%
GDP PPP (billion 2005 USD)	175.97	187.22	221.81	270.36	285.46	271.35	252.07	43.2%
Population (millions)	10.34	10.63	10.92	11.10	11.28	11.31	11.31	9.4%
CO ₂ / TPES (tCO ₂ per TJ)	78.1	79.9	77.1	75.0	73.2	72.8	74.8	-4.3%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.45	0.46	0.44	0.40	0.36	0.35	0.37	-16.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.40	0.41	0.39	0.35	0.32	0.31	0.33	-16.7%
CO ₂ / population (tCO ₂ per capita)	6.78	7.13	8.01	8.56	8.00	7.44	7.40	9.0%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	108	125	136	129	120	119	19.3%
Population	100	103	106	107	109	109	109	9.4%
GDP per population (GDP per capita)	100	103	119	143	149	141	131	30.9%
Energy intensity (TPES/GDP)	100	99	100	92	85	84	87	-13.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	102	99	96	94	93	96	-4.3%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	33.52	41.23	8.76	0.13	83.64	19.3%
Main activity producer elec. and heat	32.67	3.74	5.19	-	41.61	22.6%
Unallocated autoproducers	-	0.74	0.39	0.13	1.26	159.2%
Other energy industry own use	-	2.63	0.05	-	2.68	20.2%
Manufacturing industries and construction	0.82	4.51	1.90	-	7.24	-30.3%
Transport	-	19.45	0.03	-	19.49	29.1%
<i>of which: road</i>	-	17.08	0.03	-	17.12	48.8%
Other	0.02	10.15	1.20	-	11.37	42.3%
<i>of which: residential</i>	0.02	7.91	0.81	-	8.74	90.4%
Reference Approach	32.69	37.38	8.98	0.13	79.19	14.4%
Diff. due to losses and/or transformation	-	- 1.15	0.04	-	- 1.12	
Statistical differences	- 0.83	- 2.69	0.18	-	- 3.33	
<i>Memo: international marine bunkers</i>	-	8.75	-	-	8.75	9.8%
<i>Memo: international aviation bunkers</i>	-	2.19	-	-	2.19	-6.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	32.67	14.2%	30.0	30.0
Road - oil	17.08	48.5%	15.7	45.7
Residential - oil	7.91	75.6%	7.3	53.0
Main activity prod. elec. and heat - gas	5.19	x	4.8	57.7
Manufacturing industries - oil	4.51	-19.1%	4.1	61.9
Main activity prod. elec. and heat - oil	3.74	-29.8%	3.4	65.3
Other energy industry own use - oil	2.63	21.1%	2.4	67.7
Other transport - oil	2.37	-33.9%	2.2	69.9
Non-specified other - oil	2.24	-33.4%	2.1	72.0
<i>Memo: total CO₂ from fuel combustion</i>	<i>83.64</i>	<i>19.3%</i>	<i>76.8</i>	<i>76.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Guatemala

Figure 1. CO₂ emissions by fuel

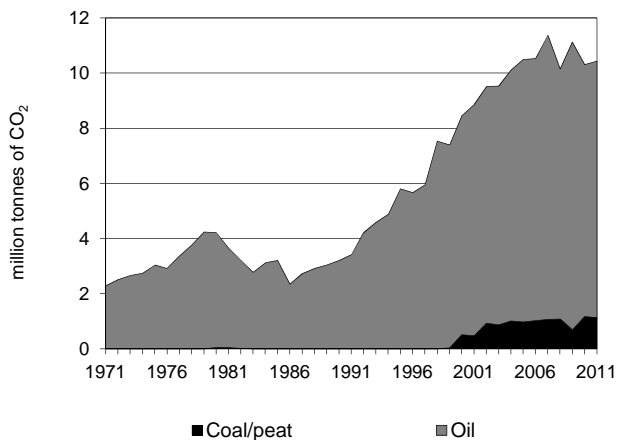


Figure 2. CO₂ emissions by sector

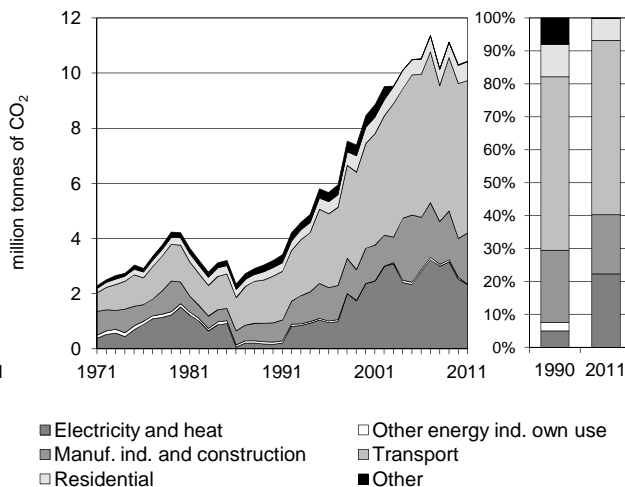


Figure 3. Reference vs Sectoral Approach

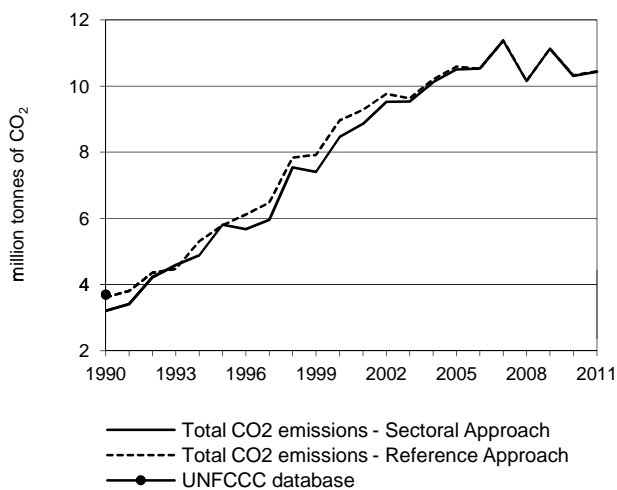


Figure 4. Electricity generation by fuel

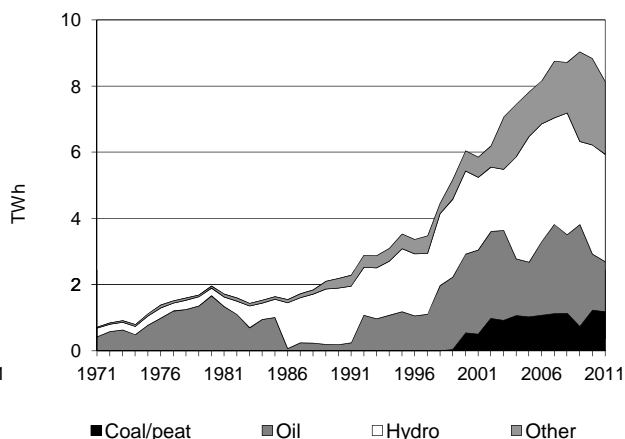


Figure 5. Changes in selected indicators *

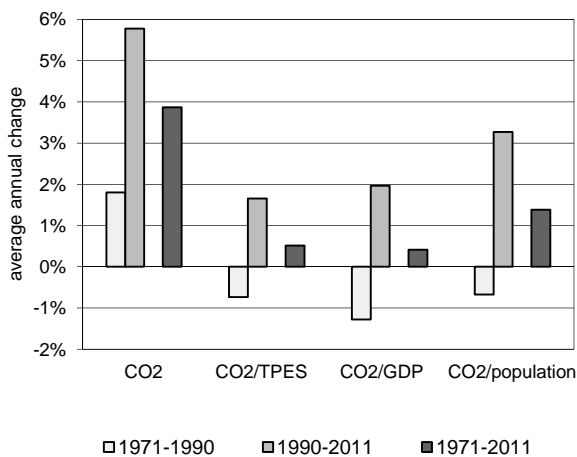
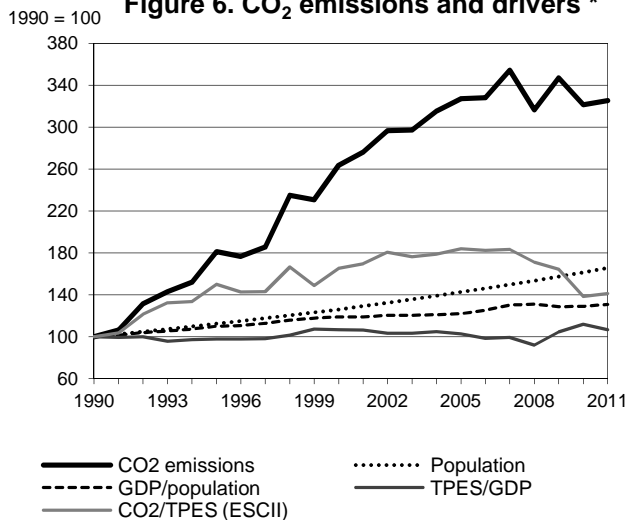


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Guatemala

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	3.21	5.81	8.46	10.50	11.13	10.31	10.44	225.2%
TPES (PJ)	185	223	295	329	390	429	426	130.4%
GDP (billion 2005 USD)	15.66	19.31	23.44	27.21	31.65	32.57	33.83	116.0%
GDP PPP (billion 2005 USD)	29.73	36.66	44.50	51.65	60.08	61.82	64.21	116.0%
Population (millions)	8.92	10.02	11.24	12.72	14.03	14.39	14.76	65.4%
CO ₂ / TPES (tCO ₂ per TJ)	17.4	26.1	28.7	31.9	28.5	24.0	24.5	41.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.20	0.30	0.36	0.39	0.35	0.32	0.31	50.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.11	0.16	0.19	0.20	0.19	0.17	0.16	50.5%
CO ₂ / population (tCO ₂ per capita)	0.36	0.58	0.75	0.83	0.79	0.72	0.71	96.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	181	264	327	347	321	325	225.2%
Population	100	112	126	143	157	161	165	65.4%
GDP per population (GDP per capita)	100	110	119	122	128	129	131	30.6%
Energy intensity (TPES/GDP)	100	98	107	102	105	112	107	6.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	150	165	184	164	138	141	41.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	1.12	9.32	-	-	10.44	225.2%
Main activity producer elec. and heat	1.12	1.16	-	-	2.28	+
Unallocated autoproducers	-	0.06	-	-	0.06	x
Other energy industry own use	-	-	-	-	-	-100.0%
Manufacturing industries and construction	-	1.87	-	-	1.87	166.3%
Transport	-	5.52	-	-	5.52	226.8%
<i>of which: road</i>	-	5.51	-	-	5.51	226.3%
Other	-	0.71	-	-	0.71	24.0%
<i>of which: residential</i>	-	0.69	-	-	0.69	119.8%
Reference Approach	1.12	9.32	-	-	10.44	189.5%
Diff. due to losses and/or transformation	-	0.00	-	-	0.00	
Statistical differences	-	0.00	-	-	0.00	
<i>Memo: international marine bunkers</i>	-	0.92	-	-	0.92	117.2%
<i>Memo: international aviation bunkers</i>	-	0.12	-	-	0.12	-9.7%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	5.51	226.3%	22.9	22.9
Manufacturing industries - oil	1.87	166.3%	7.8	30.7
Main activity prod. elec. and heat - oil	1.16	611.1%	4.8	35.6
Main activity prod. elec. and heat - coal/peat	1.12	x	4.7	40.2
Residential - oil	0.69	119.8%	2.9	43.1
Unallocated autoproducers - oil	0.06	x	0.2	43.4
Non-specified other - oil	0.02	-93.1%	0.1	43.4
Other transport - oil	0.01	x	0.0	43.5
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>10.44</i>	<i>225.2%</i>	<i>43.5</i>	<i>43.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Haiti

Figure 1. CO₂ emissions by fuel

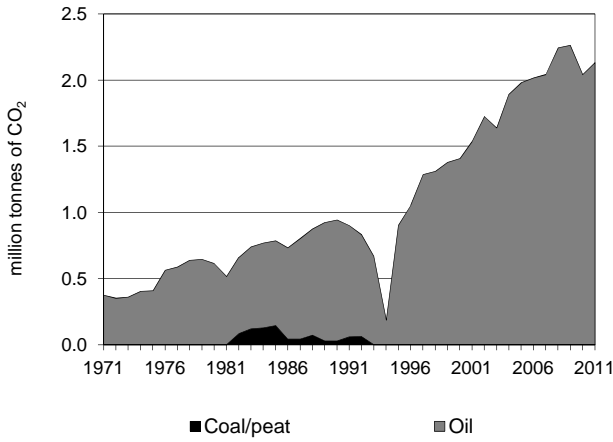


Figure 2. CO₂ emissions by sector

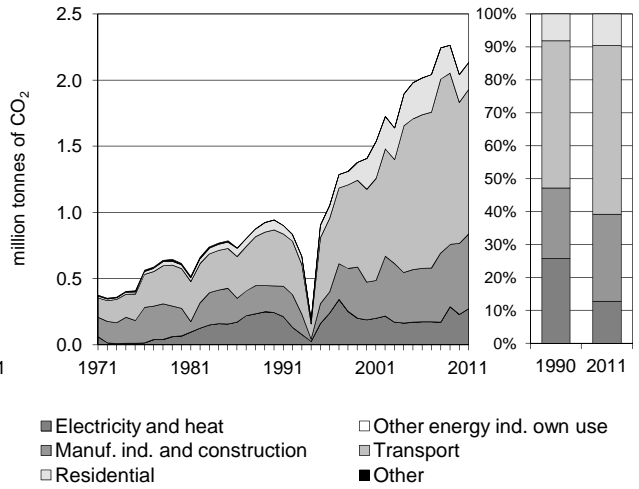


Figure 3. Reference vs Sectoral Approach

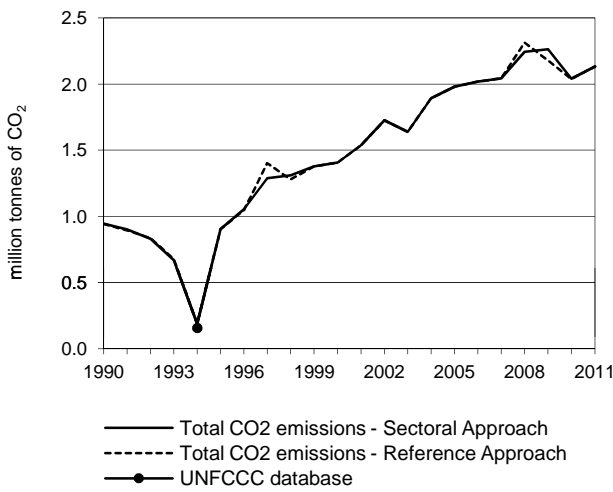


Figure 4. Electricity generation by fuel

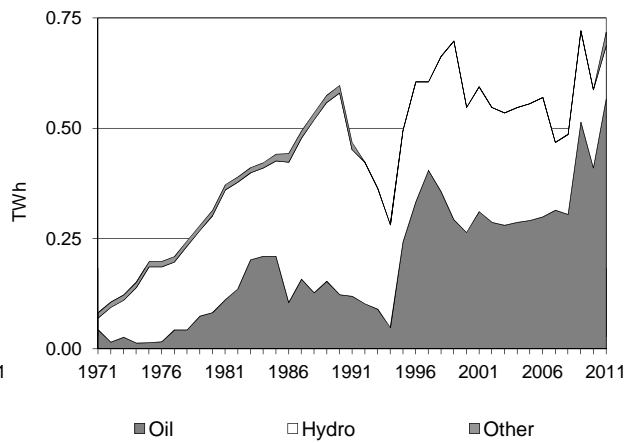


Figure 5. Changes in selected indicators *

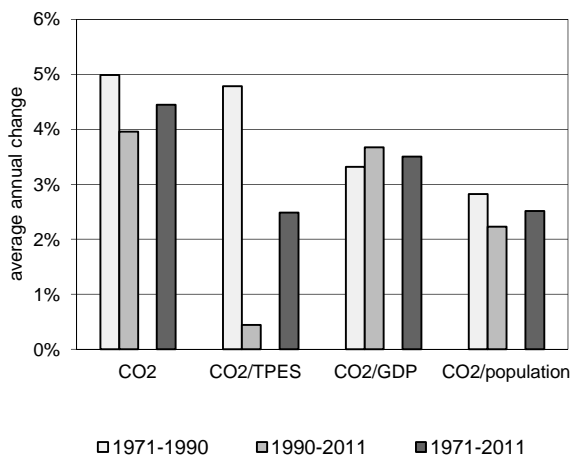
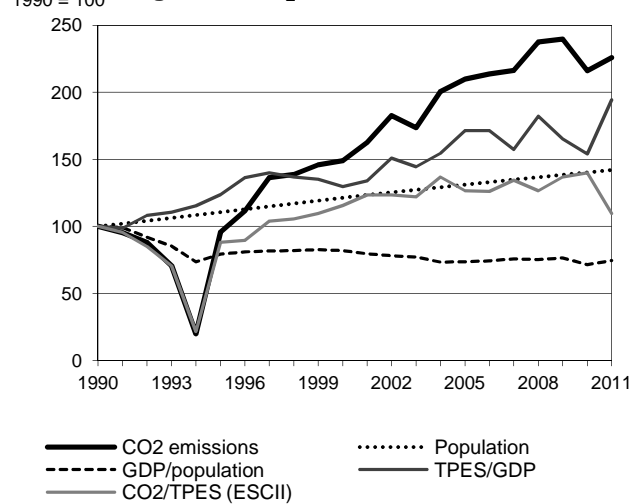


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Haiti

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	0.94	0.90	1.41	1.98	2.26	2.04	2.13	125.8%
TPES (PJ)	65	71	84	108	114	101	134	105.8%
GDP (billion 2005 USD)	4.30	3.77	4.27	4.15	4.55	4.31	4.55	5.8%
GDP PPP (billion 2005 USD)	9.89	8.68	9.83	9.56	10.49	9.92	10.47	5.8%
Population (millions)	7.13	7.88	8.65	9.35	9.86	9.99	10.12	42.1%
CO ₂ / TPES (tCO ₂ per TJ)	14.5	12.8	16.7	18.3	19.8	20.2	15.9	9.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.22	0.24	0.33	0.48	0.50	0.47	0.47	113.4%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.10	0.10	0.14	0.21	0.22	0.21	0.20	113.3%
CO ₂ / population (tCO ₂ per capita)	0.13	0.11	0.16	0.21	0.23	0.20	0.21	58.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	96	149	210	240	216	226	125.8%
Population	100	111	121	131	138	140	142	42.1%
GDP per population (GDP per capita)	100	79	82	74	77	71	74	-25.5%
Energy intensity (TPES/GDP)	100	124	130	171	165	154	194	94.4%
Carbon intensity: ESCII (CO ₂ /TPES)	100	88	116	127	137	140	110	9.7%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	2.13	-	-	2.13	125.8%
Main activity producer elec. and heat	-	0.27	-	-	0.27	23.8%
Unallocated autoproducers
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	-	0.56	-	-	0.56	178.8%
Transport	-	1.09	-	-	1.09	158.4%
<i>of which: road</i>	-	0.40	-	-	0.40	116.7%
Other	-	0.20	-	-	0.20	166.4%
<i>of which: residential</i>	-	0.20	-	-	0.20	166.4%
Reference Approach	-	2.13	-	-	2.13	126.5%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	-	-	-	-	-
<i>Memo: international marine bunkers</i>	-	..	-	-
<i>Memo: international aviation bunkers</i>	-	0.05	-	-	0.05	-26.1%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Other transport - oil	0.69	190.7%	8.3	8.3
Manufacturing industries - oil	0.56	225.0%	6.8	15.1
Road - oil	0.40	116.7%	4.8	19.9
Main activity prod. elec. and heat - oil	0.27	23.8%	3.3	23.2
Residential - oil	0.20	166.4%	2.5	25.7
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>2.13</i>	<i>125.8%</i>	<i>25.7</i>	<i>25.7</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Honduras

Figure 1. CO₂ emissions by fuel

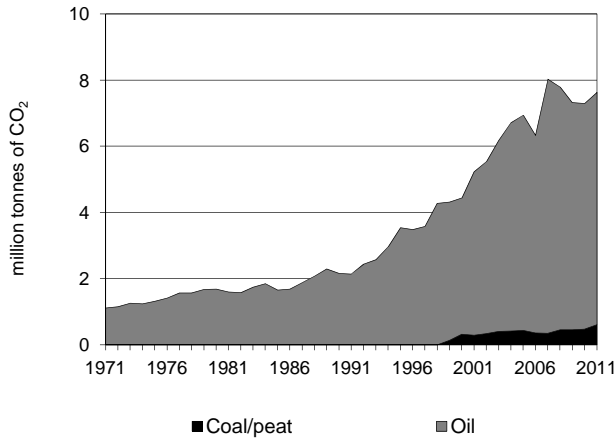


Figure 2. CO₂ emissions by sector

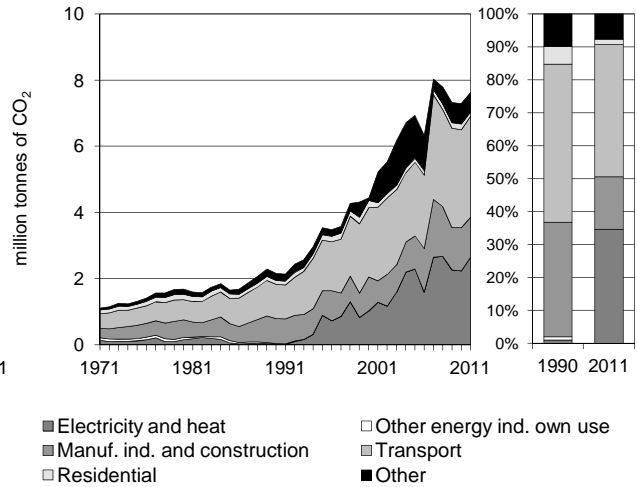


Figure 3. Reference vs Sectoral Approach

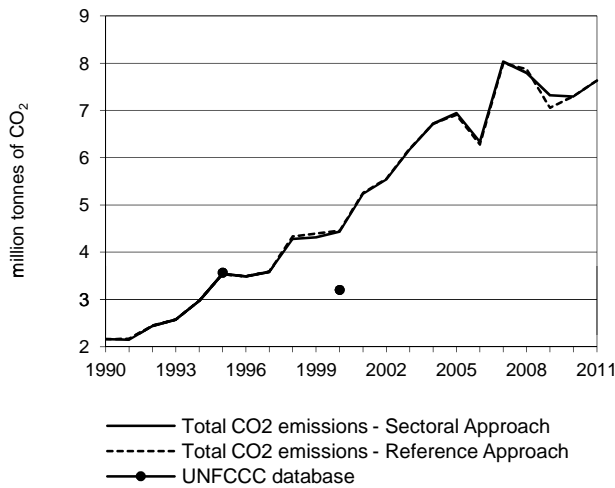


Figure 4. Electricity generation by fuel

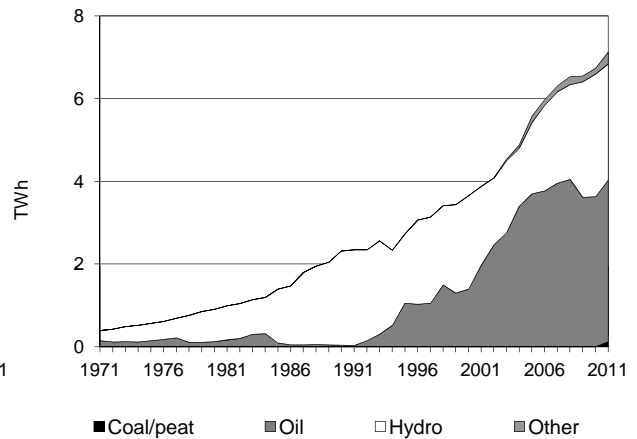


Figure 5. Changes in selected indicators *

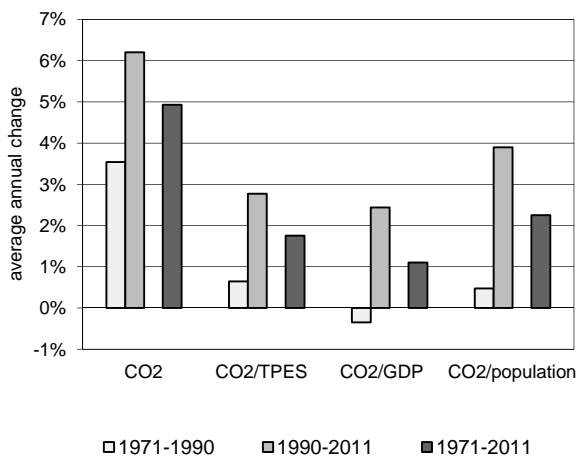
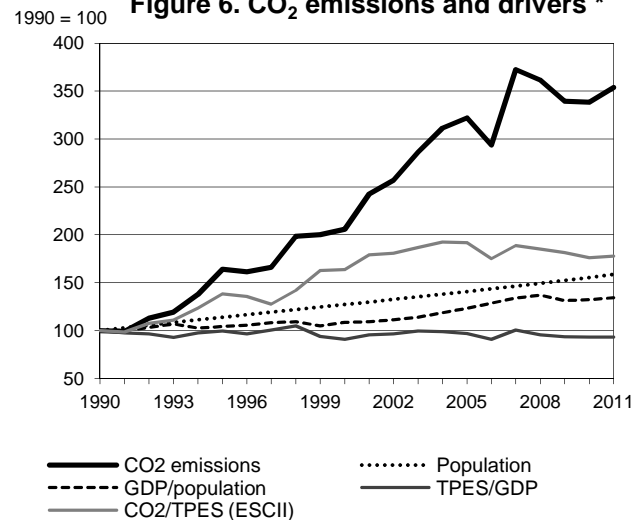


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Honduras

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2.16	3.54	4.44	6.94	7.32	7.30	7.63	253.8%
TPES (PJ)	100	118	125	167	186	191	198	99.2%
GDP (billion 2005 USD)	5.60	6.66	7.74	9.71	11.21	11.53	11.94	113.2%
GDP PPP (billion 2005 USD)	13.00	15.46	17.96	22.54	26.02	26.74	27.71	113.2%
Population (millions)	4.89	5.58	6.22	6.88	7.45	7.60	7.76	58.6%
CO ₂ / TPES (tCO ₂ per TJ)	21.7	29.9	35.5	41.5	39.3	38.2	38.5	77.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.39	0.53	0.57	0.71	0.65	0.63	0.64	65.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.17	0.23	0.25	0.31	0.28	0.27	0.28	65.9%
CO ₂ / population (tCO ₂ per capita)	0.44	0.63	0.71	1.01	0.98	0.96	0.98	123.1%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	164	206	322	339	338	354	253.8%
Population	100	114	127	141	152	155	159	58.6%
GDP per population (GDP per capita)	100	104	109	123	131	132	134	34.4%
Energy intensity (TPES/GDP)	100	100	91	97	93	93	93	-6.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	138	164	192	181	176	178	77.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.61	7.02	-	-	7.63	253.8%
Main activity producer elec. and heat	0.12	2.53	-	-	2.65	+
Unallocated autoproducers	..	..	..	..	..	..
Other energy industry own use	-	-	-	-	-	-100.0%
Manufacturing industries and construction	0.49	0.72	-	-	1.21	61.8%
Transport	-	3.06	-	-	3.06	195.9%
<i>of which: road</i>	-	3.06	-	-	3.06	195.9%
Other	-	0.71	-	-	0.71	116.3%
<i>of which: residential</i>	-	0.13	-	-	0.13	8.3%
Reference Approach	0.61	7.02	-	-	7.63	253.1%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	0.00	0.00	-	-	0.00	-
<i>Memo: international marine bunkers</i>	-	0.00	-	-	0.00	..
<i>Memo: international aviation bunkers</i>	-	0.07	-	-	0.07	-24.1%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	3.06	195.9%	17.5	17.5
Main activity prod. elec. and heat - oil	2.53	+	14.5	32.0
Manufacturing industries - oil	0.72	-3.3%	4.1	36.2
Non-specified other - oil	0.59	175.4%	3.4	39.5
Manufacturing industries - coal/peat	0.49	+	2.8	42.3
Residential - oil	0.13	8.3%	0.7	43.1
Main activity prod. elec. and heat - coal/peat	0.12	x	0.7	43.7
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>7.63</i>	<i>253.8%</i>	<i>43.7</i>	<i>43.7</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Hong Kong, China

Figure 1. CO₂ emissions by fuel

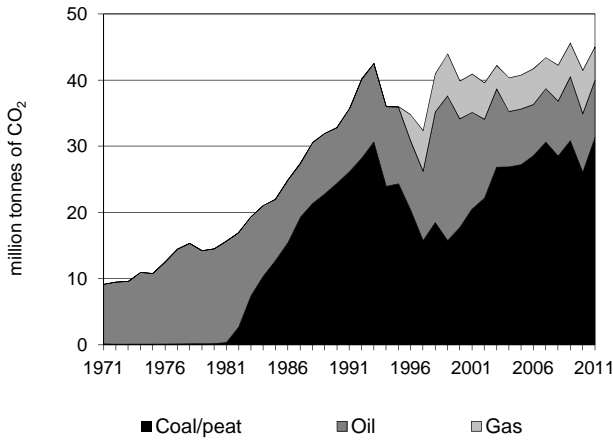


Figure 2. CO₂ emissions by sector

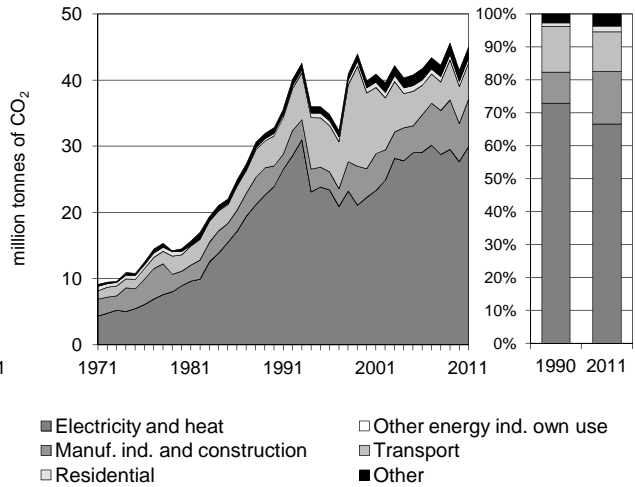


Figure 3. Reference vs Sectoral Approach

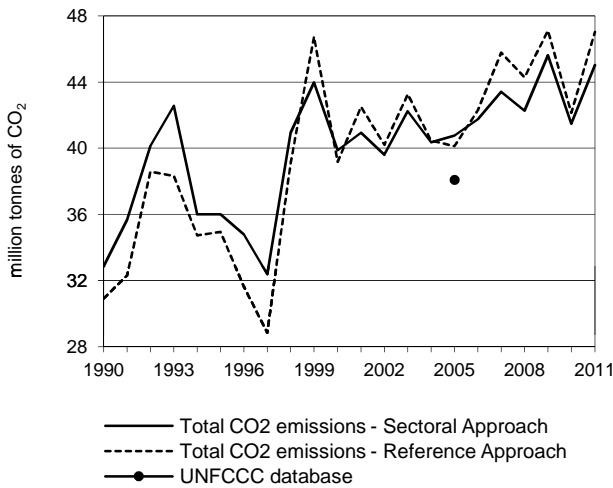


Figure 4. Electricity generation by fuel

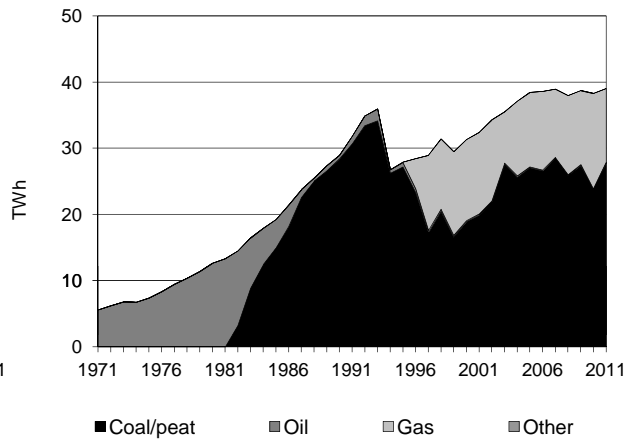


Figure 5. Changes in selected indicators *

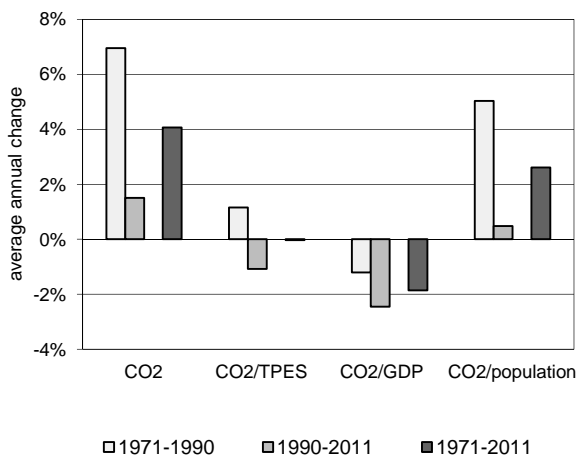
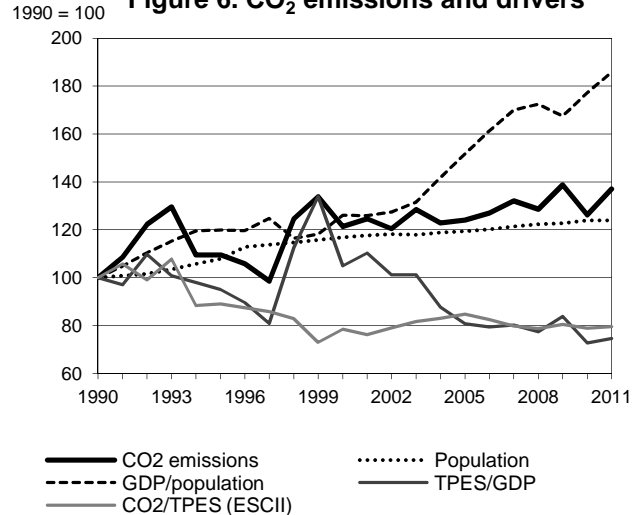


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Hong Kong, China

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	32.87	36.00	39.88	40.77	45.61	41.48	45.02	37.0%
TPES (PJ)	362	446	561	530	625	579	624	72.0%
GDP (billion 2005 USD)	100.21	129.72	147.65	181.57	206.11	220.10	230.86	130.4%
GDP PPP (billion 2005 USD)	137.02	177.38	201.89	248.27	281.83	300.95	315.67	130.4%
Population (millions)	5.71	6.16	6.67	6.81	7.00	7.07	7.07	24.0%
CO ₂ / TPES (tCO ₂ per TJ)	90.7	80.7	71.1	76.9	73.0	71.6	72.2	-20.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.33	0.28	0.27	0.22	0.22	0.19	0.20	-40.5%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.24	0.20	0.20	0.16	0.16	0.14	0.14	-40.6%
CO ₂ / population (tCO ₂ per capita)	5.76	5.85	5.98	5.98	6.51	5.87	6.37	10.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	110	121	124	139	126	137	37.0%
Population	100	108	117	119	123	124	124	24.0%
GDP per population (GDP per capita)	100	120	126	152	168	177	186	85.9%
Energy intensity (TPES/GDP)	100	95	105	81	84	73	75	-25.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	89	78	85	80	79	80	-20.4%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	31.36	8.61	5.05	-	45.02	37.0%
Main activity producer elec. and heat	24.81	0.12	5.05	-	29.97	25.1%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	5.22	1.95	-	-	7.17	130.4%
Transport	-	5.44	-	-	5.44	19.8%
<i>of which: road</i>	-	5.44	-	-	5.44	19.9%
Other	1.34	1.10	-	-	2.44	94.3%
<i>of which: residential</i>	0.77	0.03	-	-	0.79	111.5%
Reference Approach	29.97	11.23	5.83	-	47.02	52.2%
Diff. due to losses and/or transformation	- 1.39	1.63	0.78	-	1.01	
Statistical differences	-	0.99	0.00	-	0.99	
<i>Memo: international marine bunkers</i>	-	28.98	-	-	28.98	540.8%
<i>Memo: international aviation bunkers</i>	-	17.40	-	-	17.40	209.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	24.81	4.9%	49.7	49.7
Road - oil	5.44	19.9%	10.9	60.6
Manufacturing industries - coal/peat	5.22	+	10.5	71.1
Main activity prod. elec. and heat - gas	5.05	x	10.1	81.2
Manufacturing industries - oil	1.95	-36.5%	3.9	85.1
Non-specified other - oil	1.07	98.9%	2.2	87.3
Residential - coal/peat	0.77	104.0%	1.5	88.8
Non-specified other sectors - coal/peat	0.57	68.1%	1.1	90.0
Main activity prod. elec. and heat - oil	0.12	-63.3%	0.2	90.2
<i>Memo: total CO₂ from fuel combustion</i>	<i>45.02</i>	<i>37.0%</i>	<i>90.3</i>	<i>90.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Hungary

Figure 1. CO₂ emissions by fuel

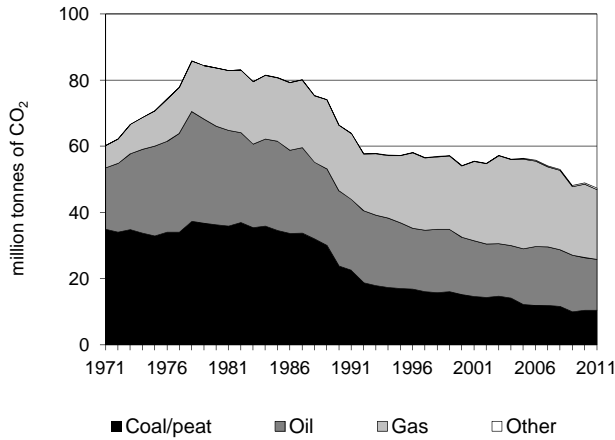


Figure 2. CO₂ emissions by sector

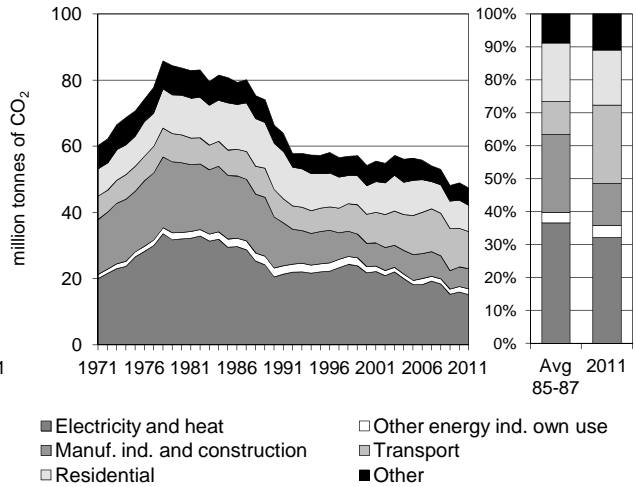


Figure 3. Reference vs Sectoral Approach

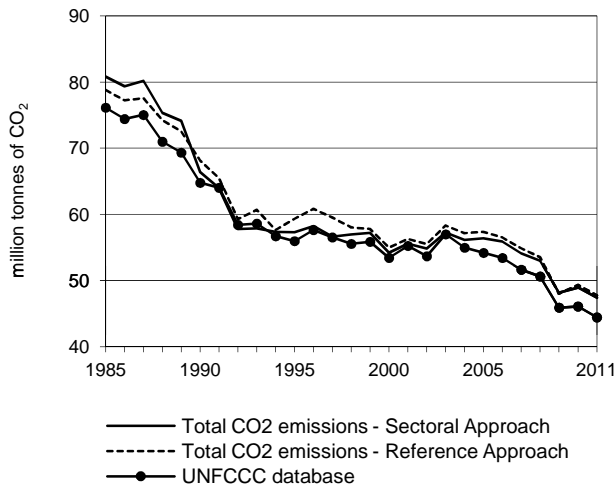


Figure 4. Electricity generation by fuel

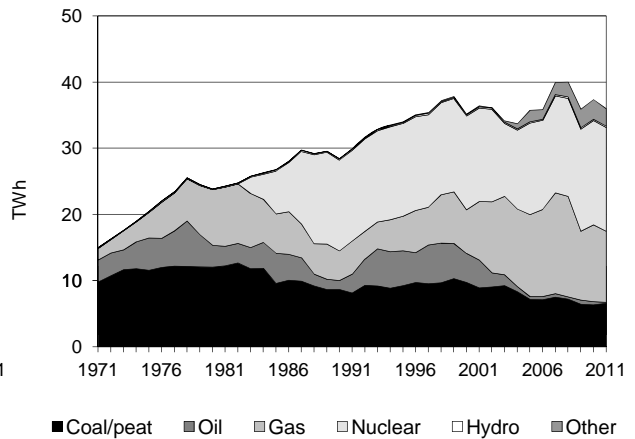


Figure 5. Changes in selected indicators *

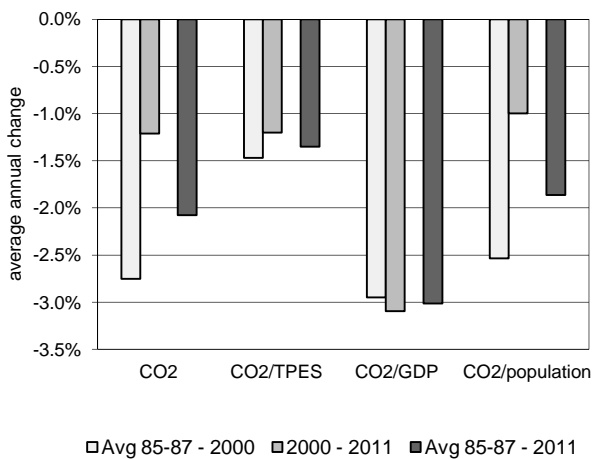
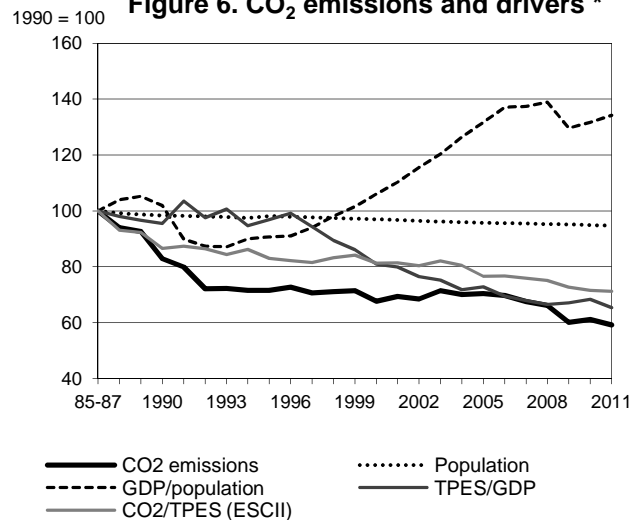


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Hungary *

Key indicators

	Avg 85-87	1990	1995	2005	2009	2010	2011	% change base-11
CO ₂ Sectoral Approach (MtCO ₂)	80.10	66.40	57.31	56.37	48.16	48.95	47.39	-40.8%
TPES (PJ)	1 258	1 204	1 083	1 155	1 041	1 075	1 045	-16.9%
GDP (billion 2005 USD)	87.49	87.69	77.80	110.32	107.93	109.36	111.16	27.1%
GDP PPP (billion 2005 USD)	135.78	136.10	120.75	171.22	167.52	169.72	172.52	27.1%
Population (millions)	10.53	10.37	10.33	10.09	10.02	10.00	9.97	-5.3%
CO ₂ / TPES (tCO ₂ per TJ)	63.7	55.2	52.9	48.8	46.3	45.5	45.3	-28.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.92	0.76	0.74	0.51	0.45	0.45	0.43	-53.4%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.59	0.49	0.47	0.33	0.29	0.29	0.27	-53.4%
CO ₂ / population (tCO ₂ per capita)	7.60	6.41	5.55	5.59	4.81	4.89	4.75	-37.5%
CO₂ emissions and drivers - Kaya decomposition (Avg 85-87=100) **								
CO ₂ emissions	100	83	72	70	60	61	59	-40.8%
Population	100	98	98	96	95	95	95	-5.3%
GDP per population (GDP per capita)	100	102	91	132	130	132	134	34.2%
Energy intensity (TPES/GDP)	100	96	97	73	67	68	65	-34.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	87	83	77	73	72	71	-28.8%

* Under the Convention Hungary is allowed the average of 85-87 as its base year. ** Please see Part I, Ch. 1 for methodological notes. Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change base-11
Sectoral Approach	10.49	15.36	21.09	0.46	47.39	-40.8%
Main activity producer elec. and heat	8.35	0.23	6.07	0.24	14.89	-41.7%
Unallocated autoproducers	0.01	-	0.29	0.05	0.34	-90.9%
Other energy industry own use	0.18	1.01	0.55	-	1.74	-32.3%
Manufacturing industries and construction	1.25	1.69	2.92	0.17	6.04	-68.0%
Transport	-	11.26	0.00	-	11.26	40.1%
<i>of which: road</i>	-	11.05	0.00	-	11.05	59.1%
Other	0.70	1.17	11.25	-	13.12	-38.4%
<i>of which: residential</i>	0.69	0.30	6.93	-	7.92	-44.1%
Reference Approach	10.89	14.81	21.54	0.46	47.70	-38.7%
Diff. due to losses and/or transformation	0.42	-0.38	0.45	-	0.49	
Statistical differences	-0.02	-0.16	0.01	-	-0.17	
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	0.71	-	-	0.71	60.4%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change base-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	11.05	59.0%	16.0	16.0
Main activity prod. elec. and heat - coal/peat	8.35	-50.0%	12.1	28.1
Residential - gas	6.93	178.8%	10.0	38.1
Main activity prod. elec. and heat - gas	6.07	27.8%	8.8	46.9
Non-specified other - gas	4.32	150.2%	6.3	53.1
Manufacturing industries - gas	2.92	-67.1%	4.2	57.4
Manufacturing industries - oil	1.69	-60.5%	2.4	59.8
Manufacturing industries - coal/peat	1.25	-78.1%	1.8	61.6
Other energy industry own use - oil	1.01	-46.7%	1.5	63.1
<i>Memo: total CO₂ from fuel combustion</i>	<i>47.39</i>	<i>-40.8%</i>	<i>68.6</i>	<i>68.6</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Iceland

Figure 1. CO₂ emissions by fuel

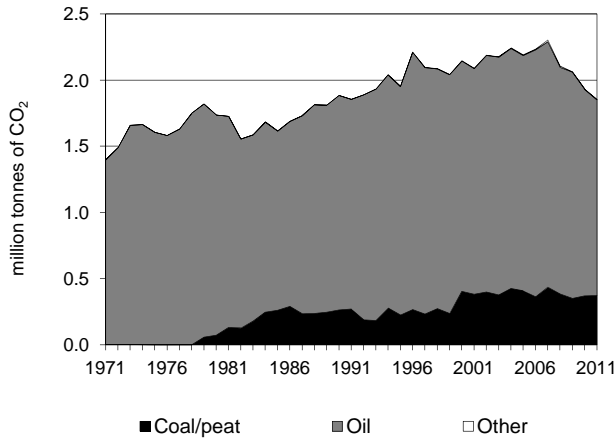


Figure 2. CO₂ emissions by sector

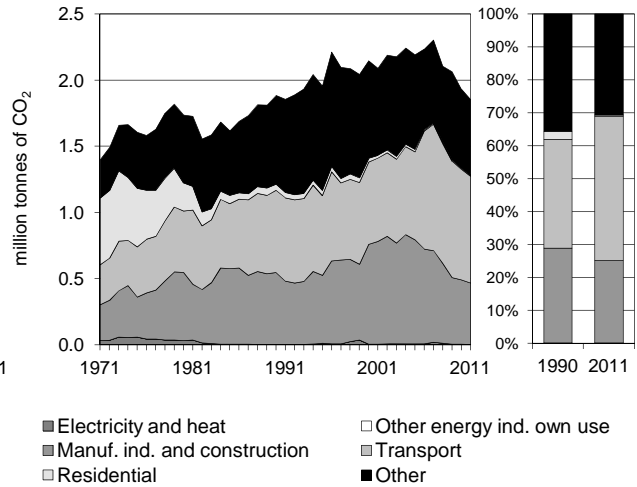


Figure 3. Reference vs Sectoral Approach

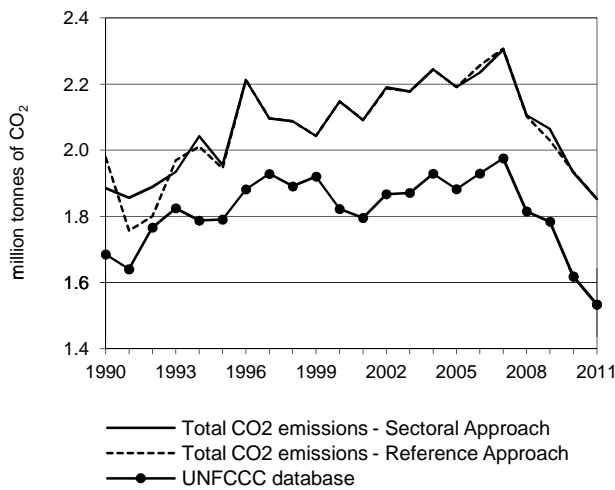


Figure 4. Electricity generation by fuel

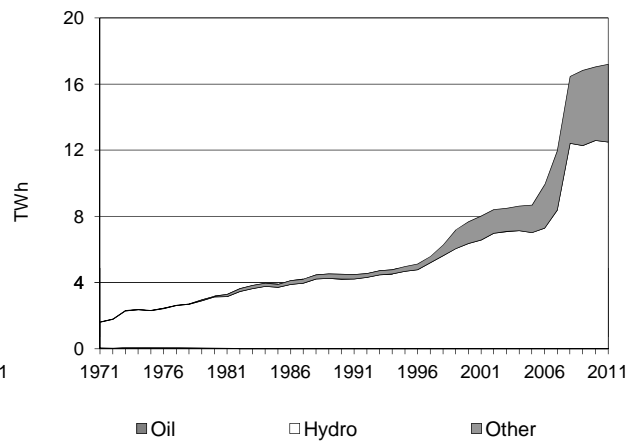


Figure 5. Changes in selected indicators *

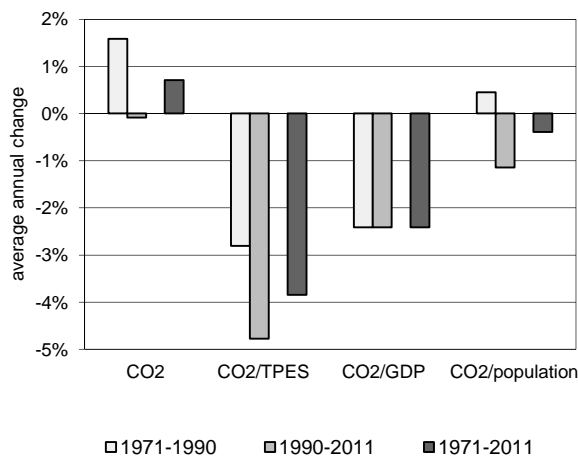
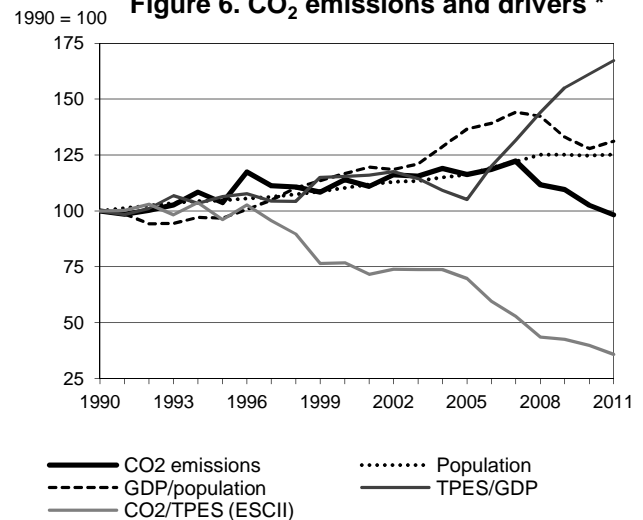


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Iceland

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	1.89	1.95	2.15	2.19	2.06	1.93	1.85	-1.7%
TPES (PJ)	87	94	130	146	225	225	240	174.4%
GDP (billion 2005 USD)	10.27	10.41	13.21	16.29	17.09	16.39	16.86	64.1%
GDP PPP (billion 2005 USD)	6.53	6.62	8.40	10.35	10.86	10.42	10.72	64.1%
Population (millions)	0.26	0.27	0.28	0.30	0.32	0.32	0.32	25.1%
CO ₂ / TPES (tCO ₂ per TJ)	21.6	20.7	16.5	15.0	9.2	8.6	7.7	-64.2%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.18	0.19	0.16	0.13	0.12	0.12	0.11	-40.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.29	0.30	0.26	0.21	0.19	0.19	0.17	-40.1%
CO ₂ / population (tCO ₂ per capita)	7.39	7.32	7.64	7.40	6.47	6.08	5.81	-21.4%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	104	114	116	109	103	98	-1.7%
Population	100	105	110	116	125	125	125	25.1%
GDP per population (GDP per capita)	100	97	117	137	133	128	131	31.2%
Energy intensity (TPES/GDP)	100	106	115	105	155	161	167	67.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	96	77	70	42	40	36	-64.2%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.37	1.48	-	-	1.85	-1.7%
Main activity producer elec. and heat	-	0.00	-	-	0.00	-
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	0.37	0.09	-	-	0.46	-14.6%
Transport	-	0.81	-	-	0.81	30.1%
<i>of which: road</i>	-	0.77	-	-	0.77	45.8%
Other	-	0.58	-	-	0.58	-19.6%
<i>of which: residential</i>	-	0.01	-	-	0.01	-80.4%
Reference Approach	0.37	1.48	-	-	1.85	-6.3%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	0.00	-	-	0.00	-
<i>Memo: international marine bunkers</i>	-	0.19	-	-	0.19	101.2%
<i>Memo: international aviation bunkers</i>	-	0.41	-	-	0.41	88.7%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	0.77	45.8%	16.3	16.3
Non-specified other - oil	0.57	-15.4%	12.0	28.3
Manufacturing industries - coal/peat	0.37	40.9%	7.9	36.2
Manufacturing industries - oil	0.09	-67.5%	1.9	38.1
Other transport - oil	0.04	-59.9%	0.8	38.9
Residential - oil	0.01	-80.4%	0.2	39.1
Main activity prod. elec. and heat - oil	0.00	-	0.1	39.1
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>1.85</i>	<i>-1.7%</i>	<i>39.1</i>	<i>39.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

India

Figure 1. CO₂ emissions by fuel

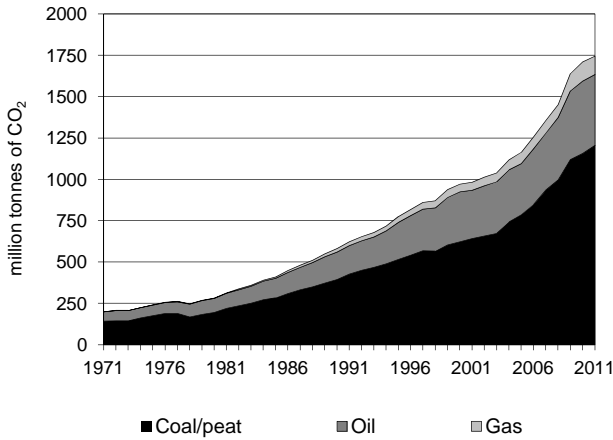


Figure 2. CO₂ emissions by sector

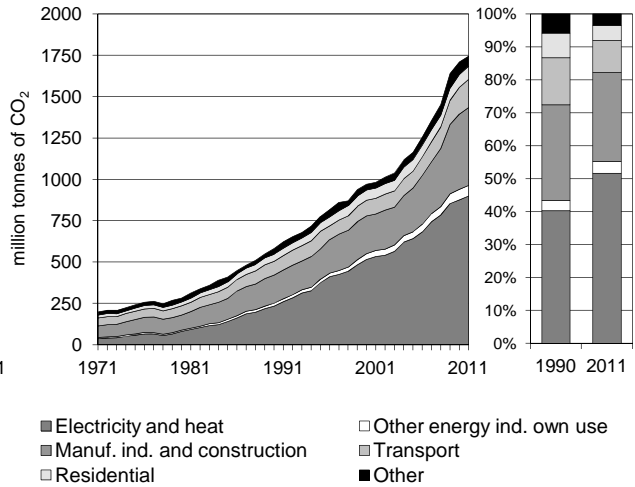


Figure 3. Reference vs Sectoral Approach

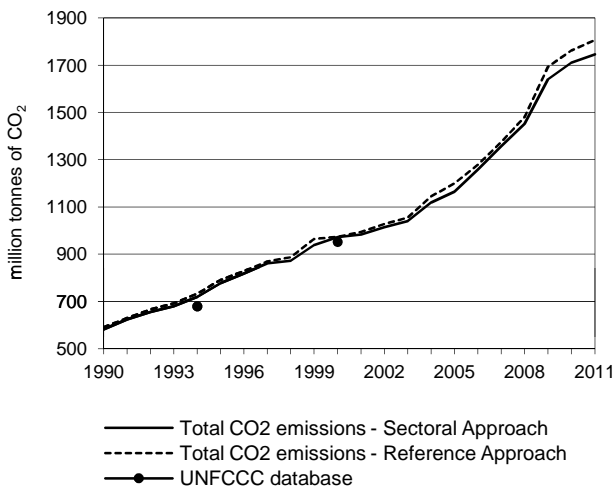


Figure 4. Electricity generation by fuel

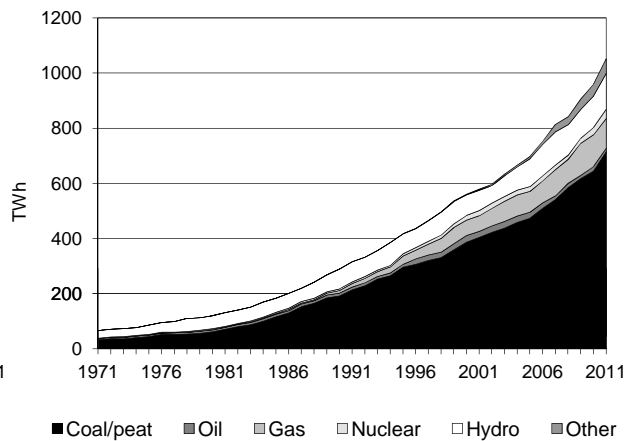


Figure 5. Changes in selected indicators *

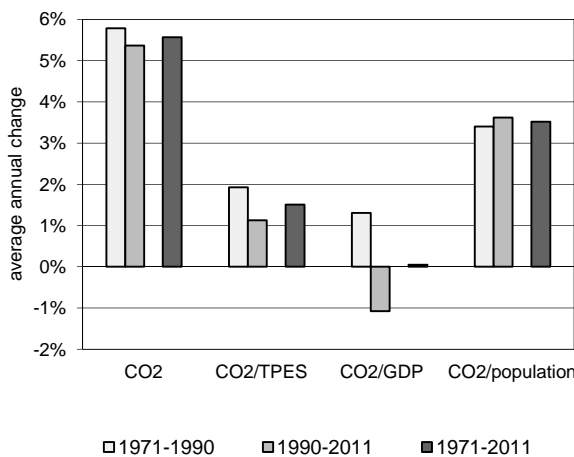
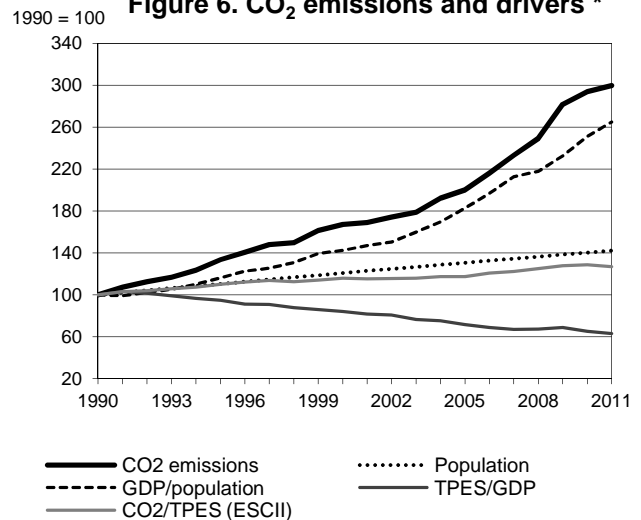


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

India

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	582.34	776.51	972.13	1 164.36	1 640.54	1 710.43	1 745.06	199.7%
TPES (PJ)	13 261	16 089	19 142	22 583	29 239	30 302	31 378	136.6%
GDP (billion 2005 USD)	350.24	448.72	601.31	834.22	1 125.44	1 232.95	1 317.48	276.2%
GDP PPP (billion 2005 USD)	1 057.12	1 354.36	1 814.92	2 517.88	3 396.87	3 721.37	3 976.50	276.2%
Population (millions)	873.79	964.49	1 053.90	1 140.04	1 207.74	1 224.61	1 241.49	42.1%
CO ₂ / TPES (tCO ₂ per TJ)	43.9	48.3	50.8	51.6	56.1	56.4	55.6	26.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.66	1.73	1.62	1.40	1.46	1.39	1.32	-20.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.55	0.57	0.54	0.46	0.48	0.46	0.44	-20.3%
CO ₂ / population (tCO ₂ per capita)	0.67	0.81	0.92	1.02	1.36	1.40	1.41	110.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	133	167	200	282	294	300	199.7%
Population	100	110	121	130	138	140	142	42.1%
GDP per population (GDP per capita)	100	116	142	183	232	251	265	164.8%
Energy intensity (TPES/GDP)	100	95	84	71	69	65	63	-37.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	110	116	117	128	129	127	26.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	1 205.22	430.07	109.77	-	1 745.06	199.7%
Main activity producer elec. and heat	753.36	4.77	36.59	-	794.72	263.2%
Unallocated autoproducers	84.13	14.47	7.31	-	105.91	558.9%
Other energy industry own use	2.52	48.06	12.27	-	62.85	253.1%
Manufacturing industries and construction	334.44	104.25	32.94	-	471.62	178.9%
Transport	-	164.40	5.48	-	169.87	103.9%
<i>of which: road</i>	-	148.57	5.48	-	154.05	134.2%
Other	30.77	94.13	15.18	-	140.08	81.5%
<i>of which: residential</i>	11.89	64.40	3.70	-	80.00	83.7%
Reference Approach	1 260.67	435.74	109.77	-	1 806.18	205.7%
Diff. due to losses and/or transformation	8.29	12.90	-	-	21.19	
Statistical differences	47.16	- 7.23	-	-	39.93	
<i>Memo: international marine bunkers</i>	-	0.37	-	-	0.37	-20.4%
<i>Memo: international aviation bunkers</i>	-	12.23	-	-	12.23	230.1%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	753.36	270.6%	26.9	26.9
Manufacturing industries - coal/peat	334.44	170.0%	12.0	38.9
Road - oil	148.57	125.9%	5.3	44.2
Manufacturing industries - oil	104.25	186.2%	3.7	47.9
Unallocated autoproducers - coal/peat	84.13	590.4%	3.0	50.9
Residential - oil	64.40	102.3%	2.3	53.2
Other energy industry own use - oil	48.06	458.1%	1.7	54.9
Main activity prod. elec. and heat - gas	36.59	420.4%	1.3	56.2
Manufacturing industries - gas	32.94	273.3%	1.2	57.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>1745.06</i>	<i>199.7%</i>	<i>62.4</i>	<i>62.4</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Indonesia

Figure 1. CO₂ emissions by fuel

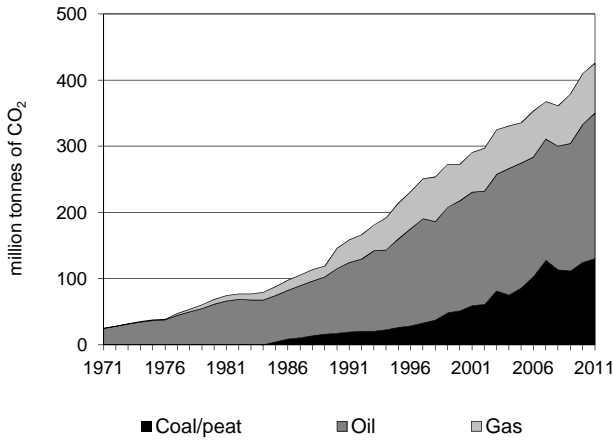


Figure 2. CO₂ emissions by sector

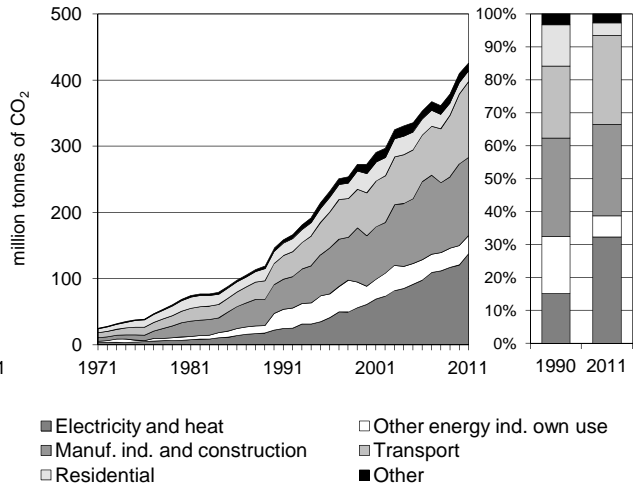


Figure 3. Reference vs Sectoral Approach

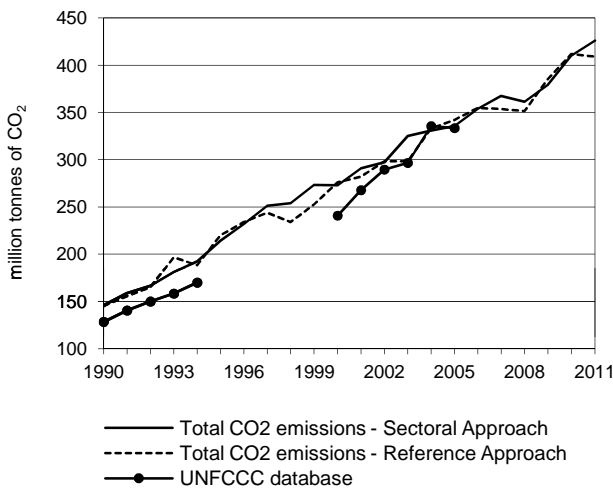


Figure 4. Electricity generation by fuel

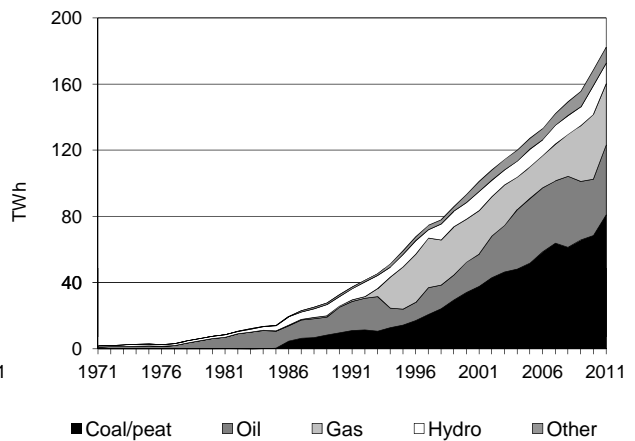


Figure 5. Changes in selected indicators *

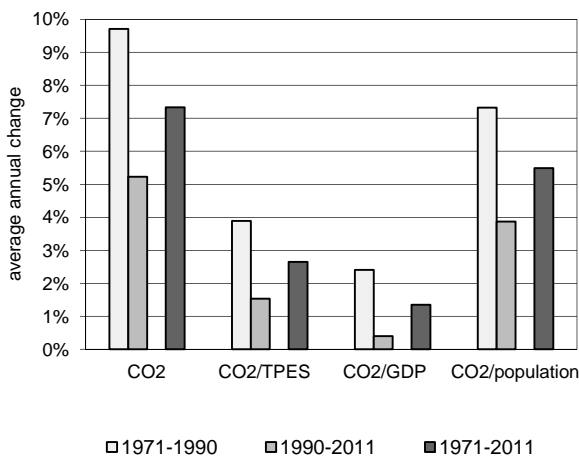
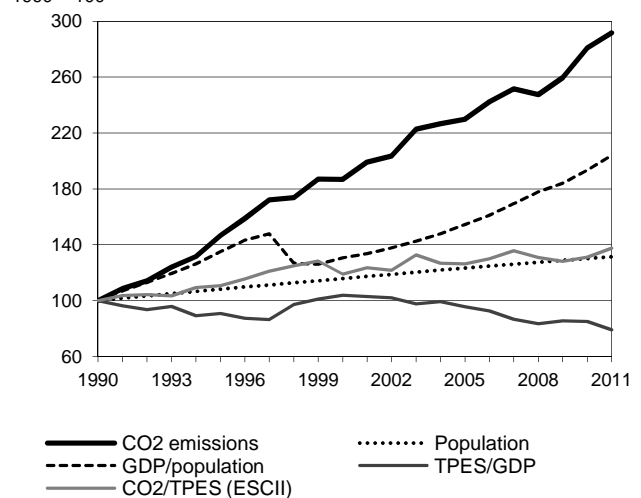


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Indonesia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	146.05	214.38	272.84	335.71	379.09	410.12	425.88	191.6%
TPES (PJ)	4 129	5 477	6 480	7 514	8 364	8 847	8 751	111.9%
GDP (billion 2005 USD)	150.09	219.17	226.92	285.87	355.76	377.80	402.19	168.0%
GDP PPP (billion 2005 USD)	370.23	540.62	559.74	705.16	877.56	931.92	992.10	168.0%
Population (millions)	184.35	199.40	213.40	227.30	237.41	239.87	242.33	31.5%
CO ₂ / TPES (tCO ₂ per TJ)	35.4	39.1	42.1	44.7	45.3	46.4	48.7	37.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.97	0.98	1.20	1.17	1.07	1.09	1.06	8.8%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.39	0.40	0.49	0.48	0.43	0.44	0.43	8.8%
CO ₂ / population (tCO ₂ per capita)	0.79	1.08	1.28	1.48	1.60	1.71	1.76	121.8%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	147	187	230	260	281	292	191.6%
Population	100	108	116	123	129	130	131	31.5%
GDP per population (GDP per capita)	100	135	131	154	184	193	204	103.9%
Energy intensity (TPES/GDP)	100	91	104	96	85	85	79	-20.9%
Carbon intensity: ESCII (CO ₂ /TPES)	100	111	119	126	128	131	138	37.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	130.42	219.80	75.66	-	425.88	191.6%
Main activity producer elec. and heat	56.82	31.33	16.49	-	104.63	371.7%
Unallocated autoproducers	29.43	0.76	2.80	-	32.99	x
Other energy industry own use	-	7.04	20.47	-	27.51	8.5%
Manufacturing industries and construction	44.16	38.55	35.40	-	118.12	171.3%
Transport	-	114.69	0.06	-	114.75	260.1%
<i>of which: road</i>	-	101.35	0.06	-	101.41	254.6%
Other	0.00	27.43	0.45	-	27.88	20.7%
<i>of which: residential</i>	0.00	16.22	0.04	-	16.26	-11.2%
Reference Approach	124.03	206.67	78.24	-	408.93	181.3%
Diff. due to losses and/or transformation	0.00	2.89	2.10	-	4.99	
Statistical differences	- 6.39	- 16.02	0.47	-	- 21.94	
<i>Memo: international marine bunkers</i>	-	0.60	-	-	0.60	-64.6%
<i>Memo: international aviation bunkers</i>	-	2.15	-	-	2.15	123.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	101.35	254.4%	13.1	13.1
Main activity prod. elec. and heat - coal/peat	56.82	520.4%	7.4	20.5
Manufacturing industries - coal/peat	44.16	425.5%	5.7	26.2
Manufacturing industries - oil	38.55	59.0%	5.0	31.2
Manufacturing industries - gas	35.40	225.2%	4.6	35.7
Main activity prod. elec. and heat - oil	31.33	150.0%	4.1	39.8
Unallocated autoproducers - coal/peat	29.43	x	3.8	43.6
Other energy industry own use - gas	20.47	6.8%	2.6	46.2
Main activity prod. elec. and heat - gas	16.49	+	2.1	48.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>425.88</i>	<i>191.6%</i>	<i>55.1</i>	<i>55.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Islamic Republic of Iran

Figure 1. CO₂ emissions by fuel

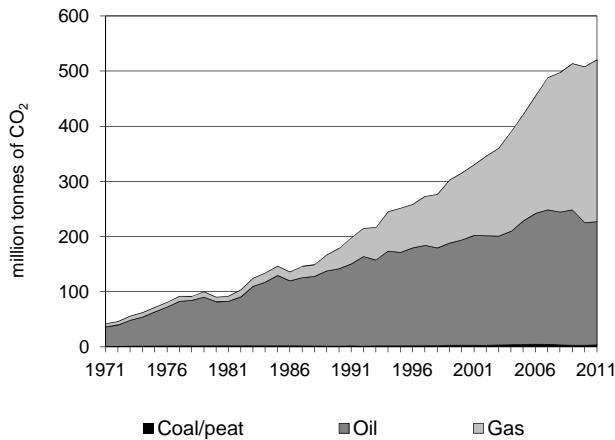


Figure 2. CO₂ emissions by sector

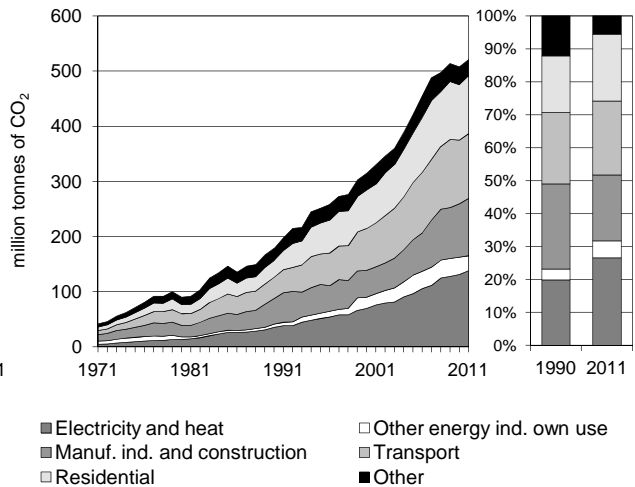


Figure 3. Reference vs Sectoral Approach

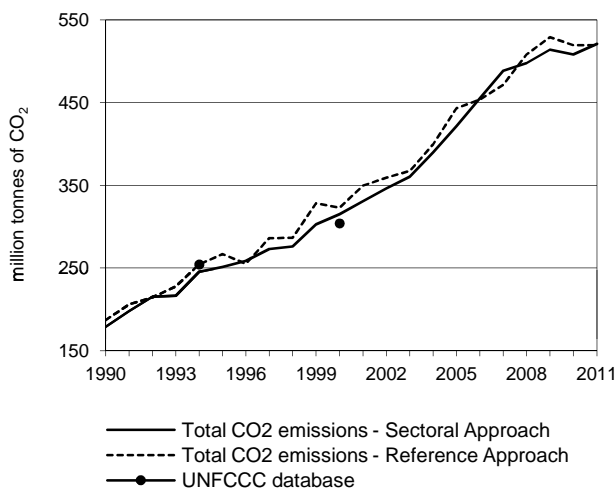


Figure 4. Electricity generation by fuel

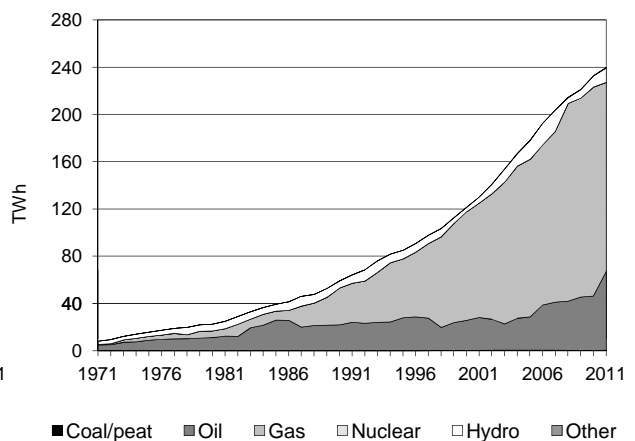


Figure 5. Changes in selected indicators *

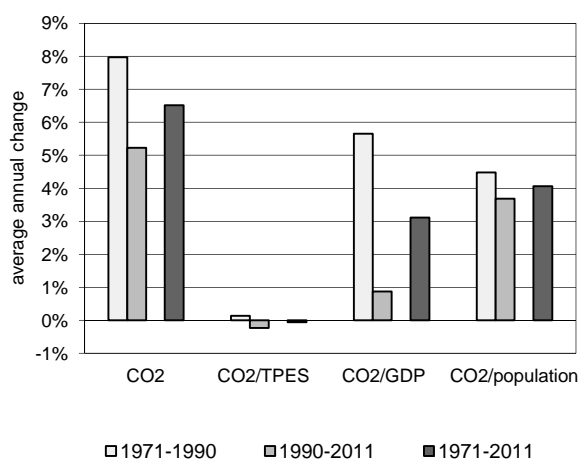
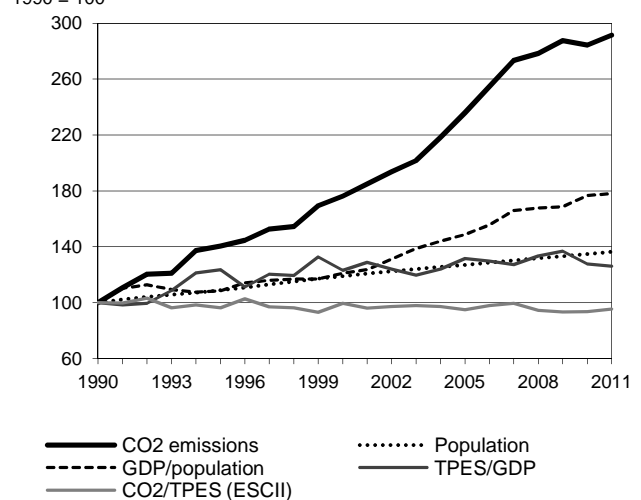


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Islamic Republic of Iran

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	178.69	251.27	315.08	421.61	513.91	508.05	520.98	191.6%
TPES (PJ)	2 903	4 238	5 149	7 220	8 936	8 821	8 882	206.0%
GDP (billion 2005 USD)	101.52	119.98	146.29	192.02	228.32	241.79	246.57	142.9%
GDP PPP (billion 2005 USD)	340.23	402.09	490.25	643.50	765.18	810.32	826.34	142.9%
Population (millions)	54.87	59.76	65.34	69.73	73.14	73.97	74.80	36.3%
CO ₂ / TPES (tCO ₂ per TJ)	61.6	59.3	61.2	58.4	57.5	57.6	58.7	-4.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.76	2.09	2.15	2.20	2.25	2.10	2.11	20.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.53	0.62	0.64	0.66	0.67	0.63	0.63	20.0%
CO ₂ / population (tCO ₂ per capita)	3.26	4.20	4.82	6.05	7.03	6.87	6.97	113.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	141	176	236	288	284	292	191.6%
Population	100	109	119	127	133	135	136	36.3%
GDP per population (GDP per capita)	100	109	121	149	169	177	178	78.2%
Energy intensity (TPES/GDP)	100	124	123	131	137	128	126	26.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	96	99	95	93	94	95	-4.7%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	3.81	223.21	293.96	-	520.98	191.6%
Main activity producer elec. and heat	-	59.99	71.25	-	131.23	301.1%
Unallocated autoproducers	1.45	0.14	5.64	-	7.23	148.6%
Other energy industry own use	1.04	6.20	19.52	-	26.75	356.2%
Manufacturing industries and construction	1.29	19.66	83.31	-	104.26	126.2%
Transport	-	103.96	13.22	-	117.17	202.4%
<i>of which: road</i>	-	102.39	12.35	-	114.74	196.1%
Other	0.03	33.27	101.02	-	134.33	156.5%
<i>of which: residential</i>	0.03	18.46	87.08	-	105.57	244.8%
Reference Approach	5.73	219.95	293.96	-	519.64	178.1%
Diff. due to losses and/or transformation	0.74	11.32	0.12	-	12.18	
Statistical differences	1.19	- 14.59	- 0.12	-	- 13.51	
<i>Memo: international marine bunkers</i>	-	7.01	-	-	7.01	470.5%
<i>Memo: international aviation bunkers</i>	-	3.55	-	-	3.55	139.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	102.39	164.2%	14.4	14.4
Residential - gas	87.08	+	12.2	26.6
Manufacturing industries - gas	83.31	491.3%	11.7	38.3
Main activity prod. elec. and heat - gas	71.25	354.7%	10.0	48.3
Main activity prod. elec. and heat - oil	59.99	251.9%	8.4	56.7
Manufacturing industries - oil	19.66	-37.3%	2.8	59.5
Other energy industry own use - gas	19.52	+	2.7	62.2
Residential - oil	18.46	-24.7%	2.6	64.8
Non-specified other - oil	14.81	-31.9%	2.1	66.9
<i>Memo: total CO₂ from fuel combustion</i>	<i>520.98</i>	<i>191.6%</i>	<i>73.1</i>	<i>73.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Iraq

Figure 1. CO₂ emissions by fuel

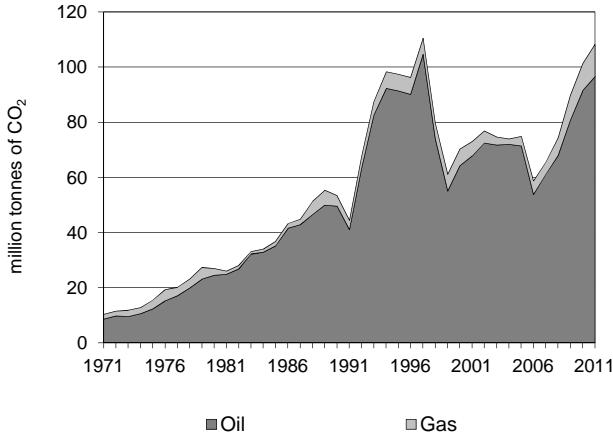


Figure 2. CO₂ emissions by sector

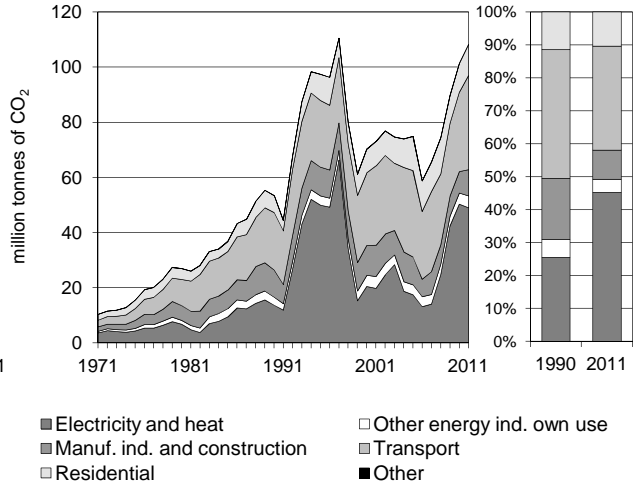


Figure 3. Reference vs Sectoral Approach

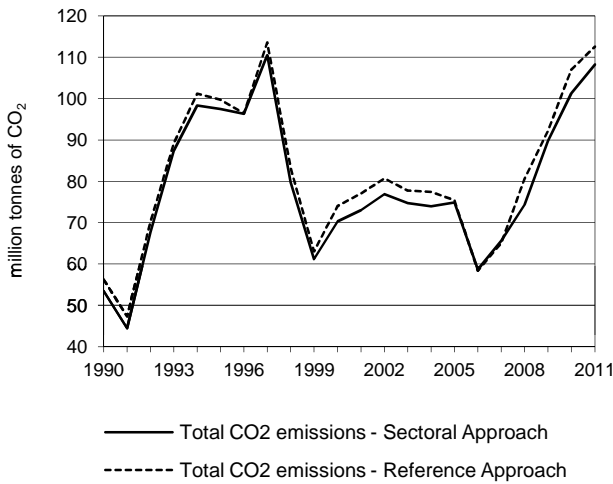


Figure 4. Electricity generation by fuel

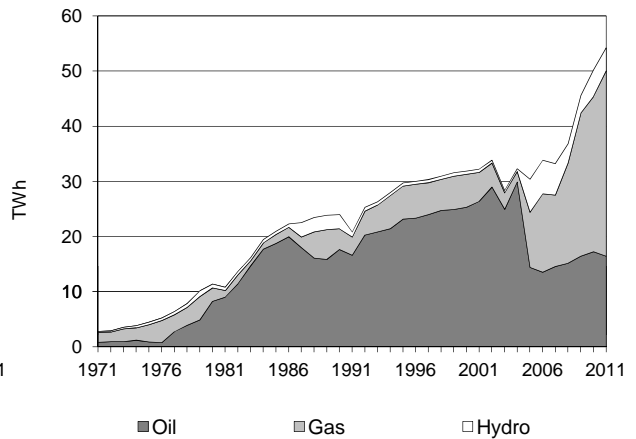


Figure 5. Changes in selected indicators *

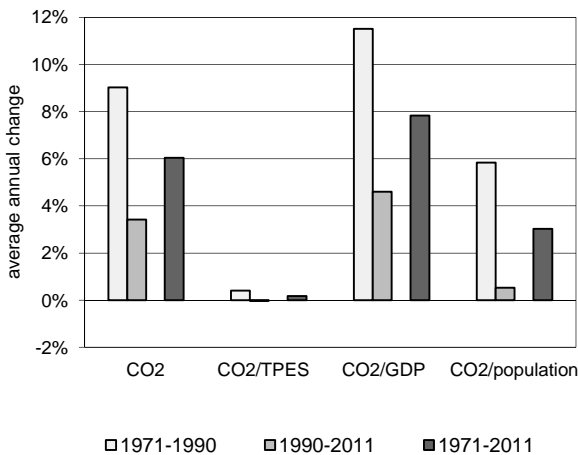
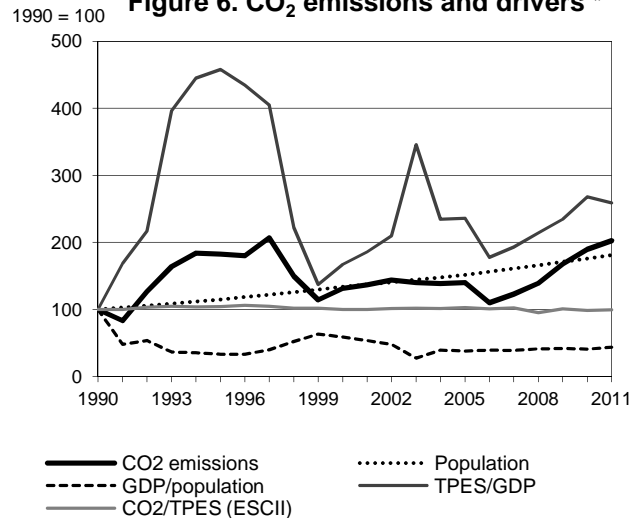


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Iraq

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	53.42	97.46	70.29	74.90	89.71	101.27	108.26	102.7%
TPES (PJ)	825	1 446	1 086	1 125	1 375	1 584	1 684	104.1%
GDP (billion 2005 USD)	54.15	20.73	42.59	31.32	38.52	38.84	42.69	-21.2%
GDP PPP (billion 2005 USD)	142.69	54.61	112.20	82.51	101.48	102.34	112.47	-21.2%
Population (millions)	18.19	20.90	24.31	27.60	31.09	32.03	32.96	81.2%
CO ₂ / TPES (tCO ₂ per TJ)	64.7	67.4	64.7	66.6	65.2	63.9	64.3	-0.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.99	4.70	1.65	2.39	2.33	2.61	2.54	157.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.37	1.78	0.63	0.91	0.88	0.99	0.96	157.1%
CO ₂ / population (tCO ₂ per capita)	2.94	4.66	2.89	2.71	2.89	3.16	3.28	11.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	182	132	140	168	190	203	102.7%
Population	100	115	134	152	171	176	181	81.2%
GDP per population (GDP per capita)	100	33	59	38	42	41	44	-56.5%
Energy intensity (TPES/GDP)	100	458	167	236	234	268	259	158.9%
Carbon intensity: ESCII (CO ₂ /TPES)	100	104	100	103	101	99	99	-0.7%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	96.56	11.70	-	108.26	102.7%
Main activity producer elec. and heat	-	37.86	11.14	-	49.00	258.9%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	4.32	-	-	4.32	48.3%
Manufacturing industries and construction	-	8.96	0.56	-	9.51	-3.6%
Transport	-	34.22	-	-	34.22	64.0%
<i>of which: road</i>	-	34.22	-	-	34.22	64.0%
Other	-	11.21	-	-	11.21	83.2%
<i>of which: residential</i>	-	11.21	-	-	11.21	83.2%
Reference Approach	-	100.91	11.70	-	112.60	100.2%
Diff. due to losses and/or transformation	-	1.00	-	-	1.00	
Statistical differences	-	3.35	0.00	-	3.35	
<i>Memo: international marine bunkers</i>	-	0.51	-	-	0.51	27.7%
<i>Memo: international aviation bunkers</i>	-	2.87	-	-	2.87	192.1%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - oil	37.86	221.8%	23.7	23.7
Road - oil	34.22	64.0%	21.4	45.1
Residential - oil	11.21	83.2%	7.0	52.1
Main activity prod. elec. and heat - gas	11.14	489.6%	7.0	59.1
Manufacturing industries - oil	8.96	12.3%	5.6	64.7
Other energy industry own use - oil	4.32	48.3%	2.7	67.4
Manufacturing industries - gas	0.56	-70.5%	0.3	67.7
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>108.26</i>	<i>102.7%</i>	<i>67.7</i>	<i>67.7</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Ireland

Figure 1. CO₂ emissions by fuel

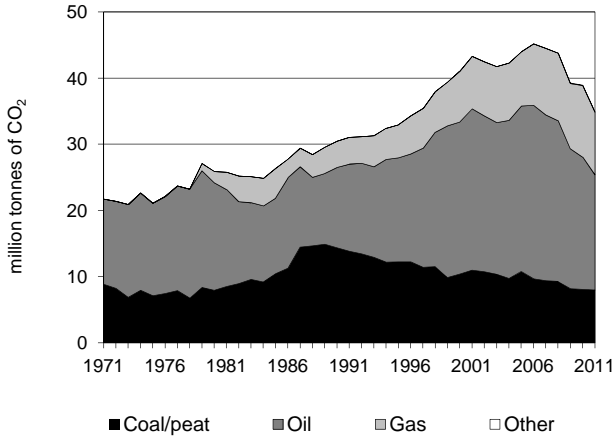


Figure 2. CO₂ emissions by sector

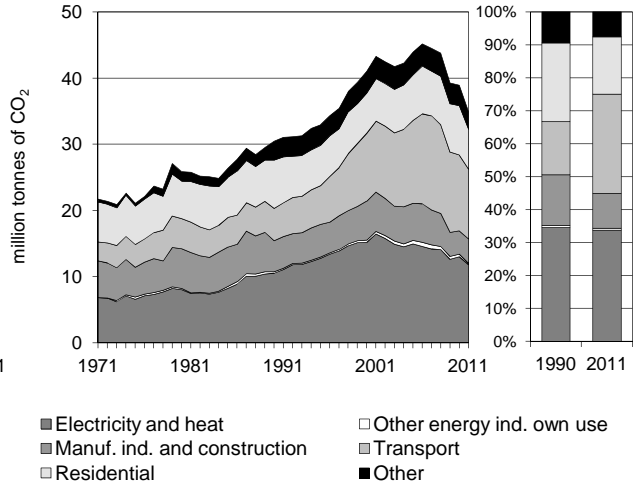


Figure 3. Reference vs Sectoral Approach

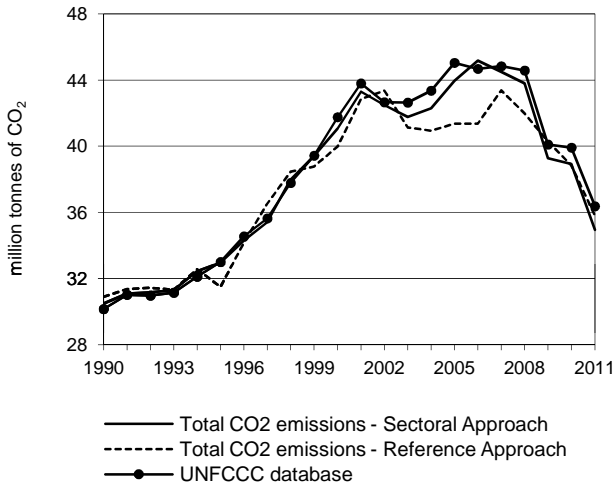


Figure 4. Electricity generation by fuel

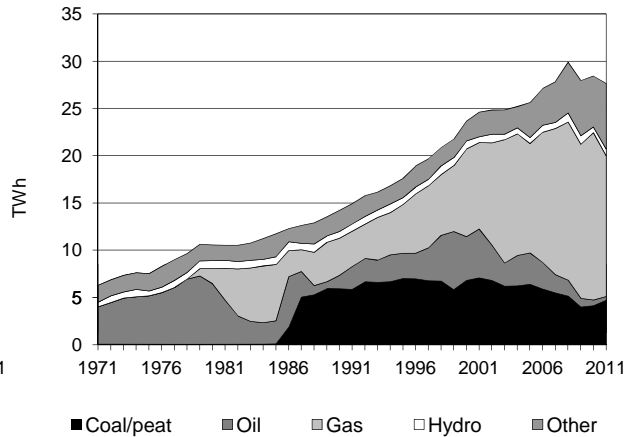


Figure 5. Changes in selected indicators *

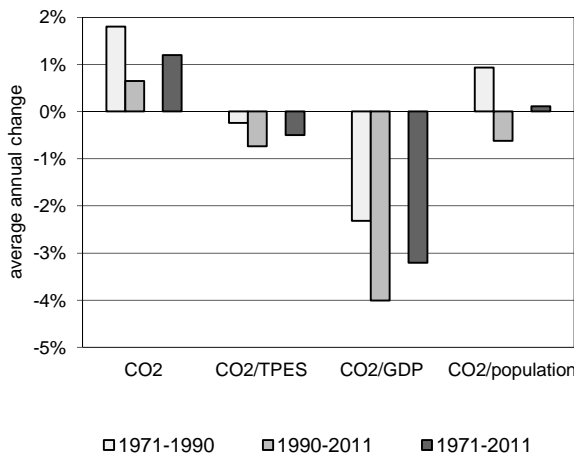
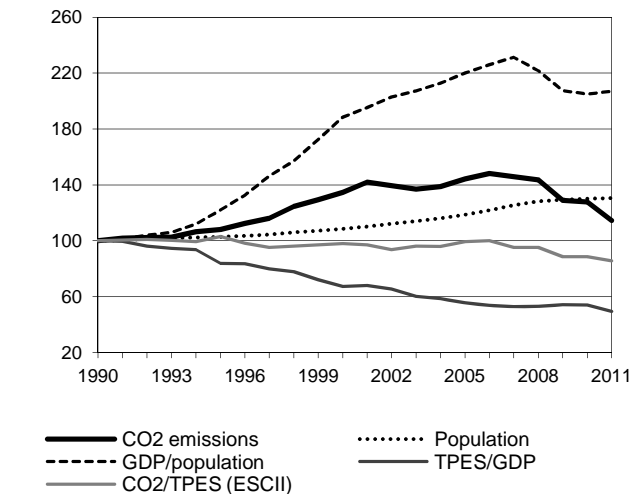


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Ireland

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	30.48	32.97	41.07	43.96	39.27	38.93	34.93	14.6%
TPES (PJ)	413	434	568	600	601	595	553	33.9%
GDP (billion 2005 USD)	77.64	97.38	158.80	202.75	208.56	206.96	209.92	170.4%
GDP PPP (billion 2005 USD)	61.80	77.51	126.40	161.39	166.01	164.74	167.09	170.4%
Population (millions)	3.51	3.60	3.80	4.16	4.54	4.56	4.58	30.5%
CO ₂ / TPES (tCO ₂ per TJ)	73.8	76.0	72.3	73.3	65.3	65.4	63.1	-14.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.39	0.34	0.26	0.22	0.19	0.19	0.17	-57.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.49	0.43	0.32	0.27	0.24	0.24	0.21	-57.6%
CO ₂ / population (tCO ₂ per capita)	8.69	9.16	10.80	10.57	8.65	8.54	7.63	-12.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	108	135	144	129	128	115	14.6%
Population	100	103	108	119	129	130	131	30.5%
GDP per population (GDP per capita)	100	122	189	220	207	205	207	107.1%
Energy intensity (TPES/GDP)	100	84	67	56	54	54	50	-50.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	103	98	99	89	89	86	-14.4%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	7.98	17.43	9.46	0.06	34.93	14.6%
Main activity producer elec. and heat	5.62	0.15	5.25	-	11.03	6.1%
Unallocated autoproducers	0.05	0.15	0.57	-	0.77	447.7%
Other energy industry own use	0.08	0.12	-	-	0.20	-6.4%
Manufacturing industries and construction	0.37	1.80	1.45	0.06	3.69	-21.2%
Transport	-	10.53	-	-	10.53	114.6%
<i>of which: road</i>	-	10.28	-	-	10.28	124.9%
Other	1.85	4.67	2.18	-	8.70	-14.2%
<i>of which: residential</i>	1.85	2.88	1.33	-	6.06	-16.6%
Reference Approach	8.29	17.81	9.62	0.06	35.79	15.8%
Diff. due to losses and/or transformation	0.10	0.34	0.15	-	0.59	
Statistical differences	0.22	0.04	0.00	-	0.26	
<i>Memo: international marine bunkers</i>	-	0.30	-	-	0.30	430.4%
<i>Memo: international aviation bunkers</i>	-	2.00	-	-	2.00	94.1%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	10.28	124.9%	18.3	18.3
Main activity prod. elec. and heat - coal/peat	5.62	-24.2%	10.0	28.4
Main activity prod. elec. and heat - gas	5.25	175.3%	9.4	37.7
Residential - oil	2.88	149.8%	5.1	42.9
Residential - coal/peat	1.85	-68.3%	3.3	46.2
Manufacturing industries - oil	1.80	-19.1%	3.2	49.4
Non-specified other - oil	1.79	-31.0%	3.2	52.6
Manufacturing industries - gas	1.45	-3.5%	2.6	55.2
Residential - gas	1.33	385.5%	2.4	57.5
<i>Memo: total CO₂ from fuel combustion</i>	34.93	14.6%	62.3	62.3

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Israel

Figure 1. CO₂ emissions by fuel

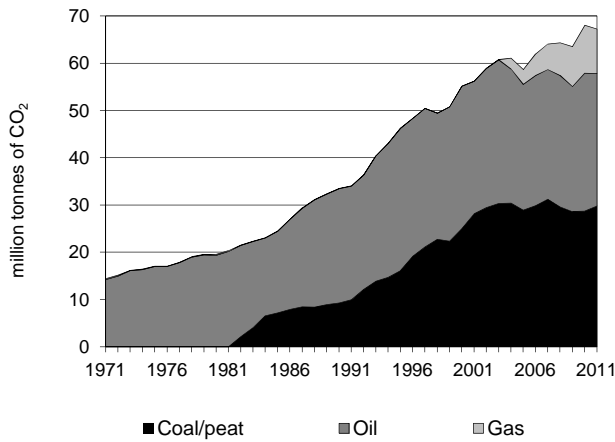


Figure 2. CO₂ emissions by sector

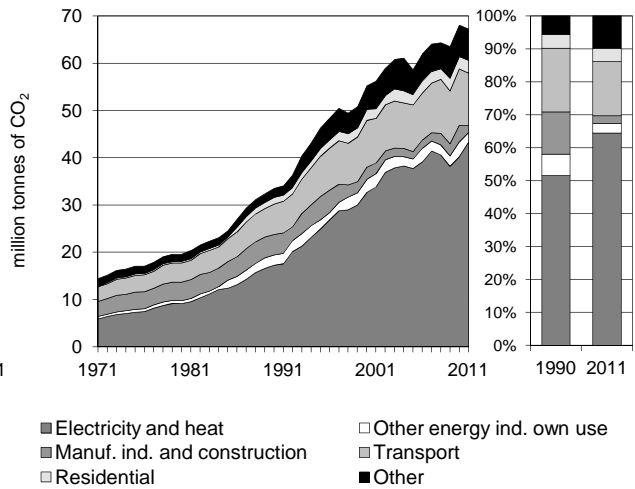


Figure 3. Reference vs Sectoral Approach

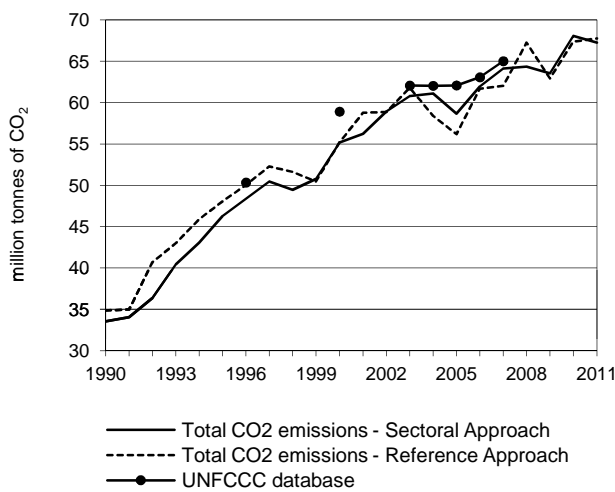


Figure 4. Electricity generation by fuel

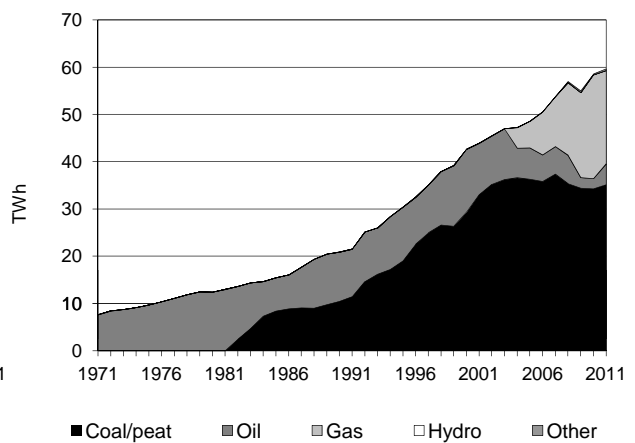


Figure 5. Changes in selected indicators *

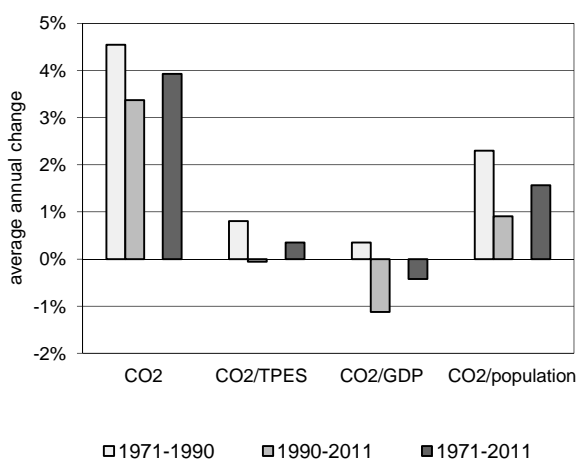
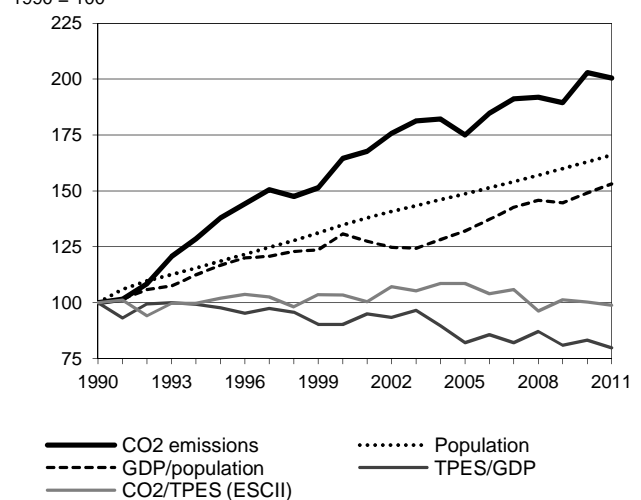


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Israel

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	33.54	46.27	55.18	58.68	63.53	68.05	67.24	100.5%
TPES (PJ)	480	649	763	774	899	971	974	102.8%
GDP (billion 2005 USD)	68.12	94.29	120.02	133.70	157.68	165.54	173.16	154.2%
GDP PPP (billion 2005 USD)	82.25	113.84	144.90	161.43	190.38	199.86	209.06	154.2%
Population (millions)	4.68	5.55	6.30	6.96	7.48	7.62	7.76	66.0%
CO ₂ / TPES (tCO ₂ per TJ)	69.9	71.3	72.3	75.9	70.7	70.1	69.1	-1.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.49	0.49	0.46	0.44	0.40	0.41	0.39	-21.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.41	0.41	0.38	0.36	0.33	0.34	0.32	-21.1%
CO ₂ / population (tCO ₂ per capita)	7.17	8.34	8.76	8.44	8.49	8.93	8.66	20.8%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	138	165	175	189	203	200	100.5%
Population	100	119	135	149	160	163	166	66.0%
GDP per population (GDP per capita)	100	117	131	132	145	149	153	53.2%
Energy intensity (TPES/GDP)	100	98	90	82	81	83	80	-20.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	102	103	109	101	100	99	-1.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	29.79	28.02	9.42	-	67.24	100.5%
Main activity producer elec. and heat	29.66	2.77	8.07	-	40.51	140.7%
Unallocated autoproducers	0.13	2.15	0.55	-	2.83	520.2%
Other energy industry own use	-	1.47	0.53	-	2.00	-8.7%
Manufacturing industries and construction	-	1.24	0.28	-	1.51	-64.8%
Transport	-	11.06	-	-	11.06	70.8%
<i>of which: road</i>	-	11.06	-	-	11.06	72.3%
Other	-	9.33	-	-	9.33	183.1%
<i>of which: residential</i>	-	2.74	-	-	2.74	95.4%
Reference Approach	30.10	28.06	9.58	-	67.74	94.3%
Diff. due to losses and/or transformation	-	1.11	-	-	1.11	
Statistical differences	0.31	-1.08	0.16	-	-0.61	
<i>Memo: international marine bunkers</i>	-	0.97	-	-	0.97	156.9%
<i>Memo: international aviation bunkers</i>	-	2.57	-	-	2.57	62.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	29.66	221.3%	38.4	38.4
Road - oil	11.06	72.3%	14.3	52.7
Main activity prod. elec. and heat - gas	8.07	x	10.4	63.1
Non-specified other - oil	6.59	247.8%	8.5	71.6
Main activity prod. elec. and heat - oil	2.77	-63.5%	3.6	75.2
Residential - oil	2.74	95.5%	3.5	78.7
Unallocated autoproducers - oil	2.15	371.1%	2.8	81.5
Other energy industry own use - oil	1.47	-32.7%	1.9	83.4
Manufacturing industries - oil	1.24	-70.6%	1.6	85.0
<i>Memo: total CO₂ from fuel combustion</i>	<i>67.24</i>	<i>100.5%</i>	<i>86.9</i>	<i>86.9</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Italy

Figure 1. CO₂ emissions by fuel

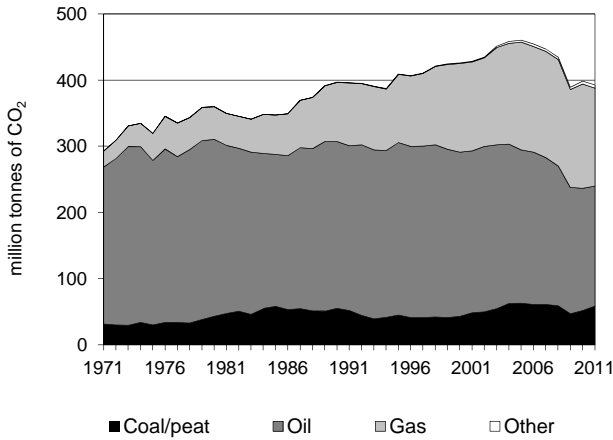


Figure 2. CO₂ emissions by sector

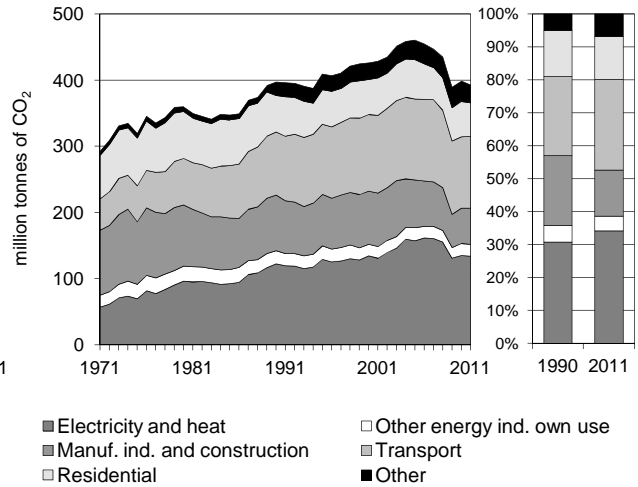


Figure 3. Reference vs Sectoral Approach

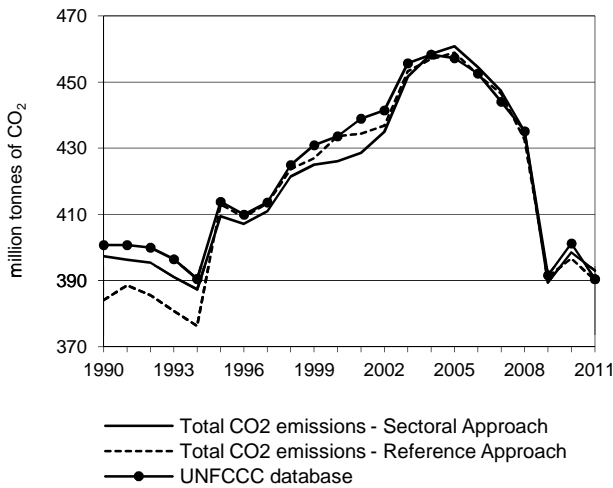


Figure 4. Electricity generation by fuel

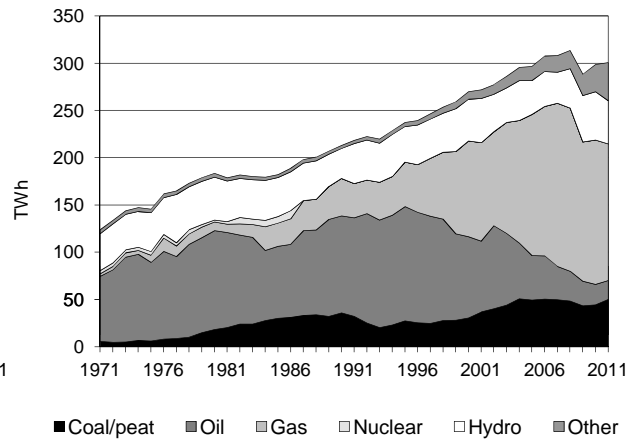


Figure 5. Changes in selected indicators *

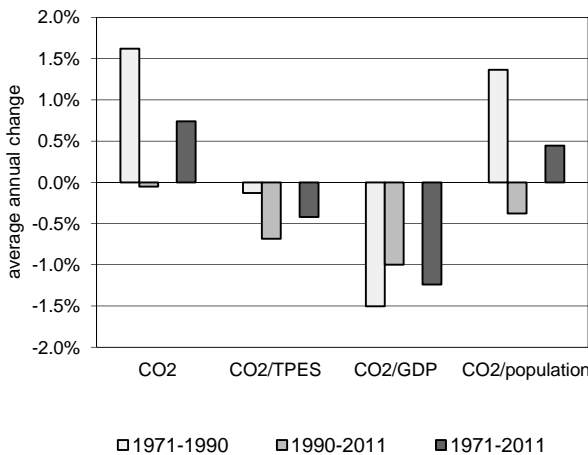
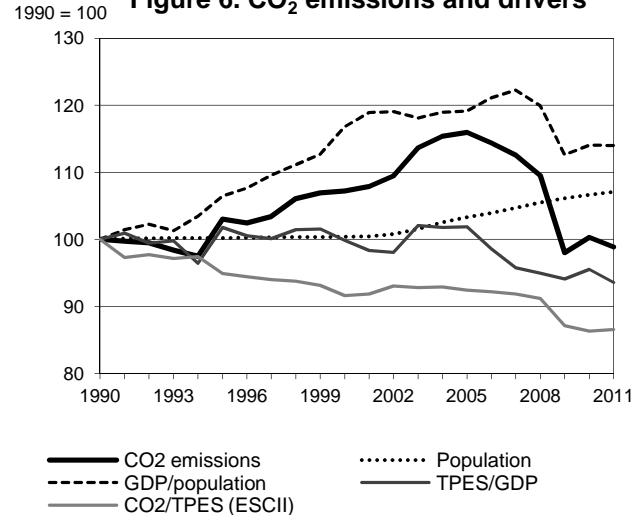


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Italy

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	397.36	409.41	426.04	460.81	389.41	398.47	392.97	-1.1%
TPES (PJ)	6 136	6 662	7 181	7 698	6 902	7 128	7 009	14.2%
GDP (billion 2005 USD)	1 450.66	1 547.70	1 700.99	1 786.28	1 734.00	1 763.89	1 770.47	22.0%
GDP PPP (billion 2005 USD)	1 346.00	1 436.04	1 578.27	1 657.40	1 608.90	1 636.63	1 642.74	22.0%
Population (millions)	56.72	56.84	56.94	58.61	60.19	60.48	60.72	7.1%
CO ₂ / TPES (tCO ₂ per TJ)	64.8	61.4	59.3	59.9	56.4	55.9	56.1	-13.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.27	0.26	0.25	0.26	0.22	0.23	0.22	-18.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.30	0.29	0.27	0.28	0.24	0.24	0.24	-19.0%
CO ₂ / population (tCO ₂ per capita)	7.01	7.20	7.48	7.86	6.47	6.59	6.47	-7.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	103	107	116	98	100	99	-1.1%
Population	100	100	100	103	106	107	107	7.1%
GDP per population (GDP per capita)	100	106	117	119	113	114	114	14.0%
Energy intensity (TPES/GDP)	100	102	100	102	94	96	94	-6.4%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	92	92	87	86	87	-13.4%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	58.38	181.47	147.97	5.15	392.97	-1.1%
Main activity producer elec. and heat	48.27	11.64	51.79	3.80	115.50	8.0%
Unallocated autoproducers	0.05	8.63	9.75	0.23	18.66	20.6%
Other energy industry own use	0.18	14.85	2.73	-	17.76	-11.4%
Manufacturing industries and construction	9.27	22.02	22.41	1.12	54.82	-34.7%
Transport	-	106.23	1.99	-	108.22	13.3%
<i>of which: road</i>	-	100.27	1.69	-	101.96	11.5%
Other	0.62	18.11	59.28	-	78.01	3.4%
<i>of which: residential</i>	0.01	8.89	42.03	-	50.94	-7.7%
Reference Approach	60.90	175.23	148.77	5.15	390.04	1.6%
Diff. due to losses and/or transformation	0.51	-3.28	0.80	-	-1.97	
Statistical differences	2.00	-2.96	0.00	-	-0.96	
<i>Memo: international marine bunkers</i>	-	7.90	-	-	7.90	-5.6%
<i>Memo: international aviation bunkers</i>	-	9.63	-	-	9.63	114.2%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	100.27	10.2%	20.4	20.4
Main activity prod. elec. and heat - gas	51.79	222.3%	10.5	30.9
Main activity prod. elec. and heat - coal/peat	48.27	74.4%	9.8	40.8
Residential - gas	42.03	59.0%	8.6	49.3
Manufacturing industries - gas	22.41	-31.9%	4.6	53.9
Manufacturing industries - oil	22.02	-37.7%	4.5	58.4
Non-specified other - gas	17.25	74.5%	3.5	61.9
Other energy industry own use - oil	14.85	1.3%	3.0	64.9
Main activity prod. elec. and heat - oil	11.64	-81.6%	2.4	67.3
<i>Memo: total CO₂ from fuel combustion</i>	<i>392.97</i>	<i>-1.1%</i>	<i>80.0</i>	<i>80.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Jamaica

Figure 1. CO₂ emissions by fuel

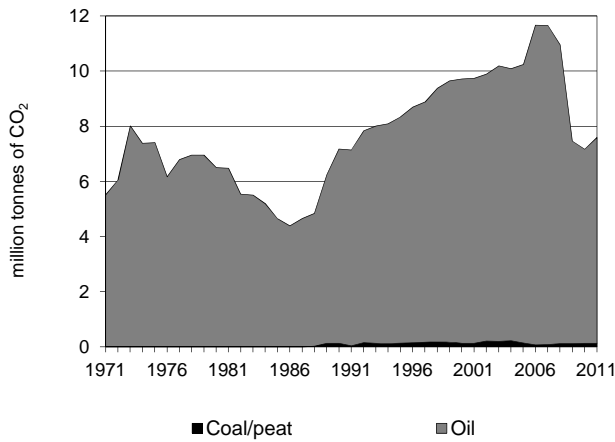


Figure 2. CO₂ emissions by sector

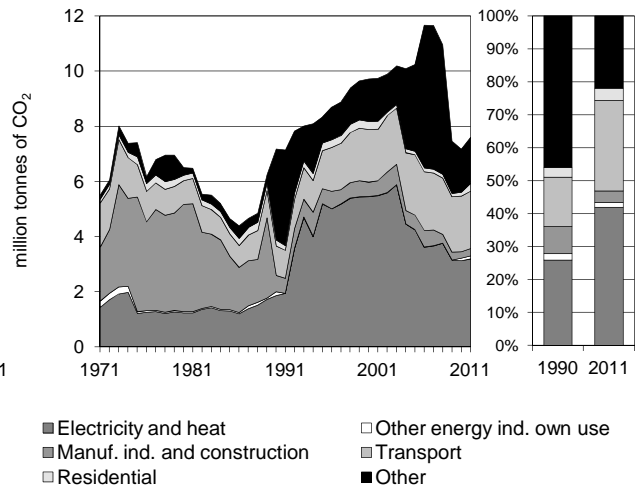


Figure 3. Reference vs Sectoral Approach

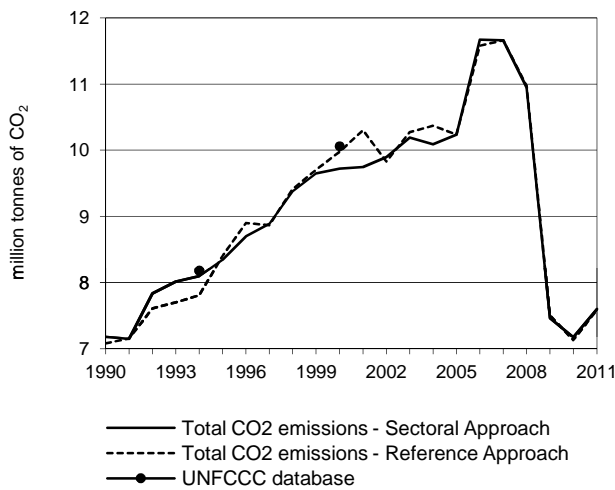


Figure 4. Electricity generation by fuel

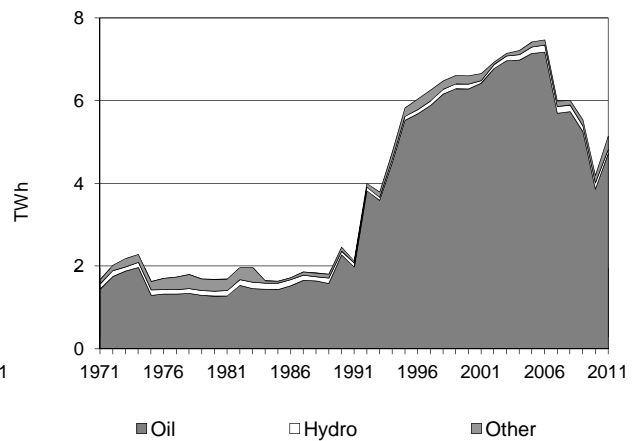


Figure 5. Changes in selected indicators *

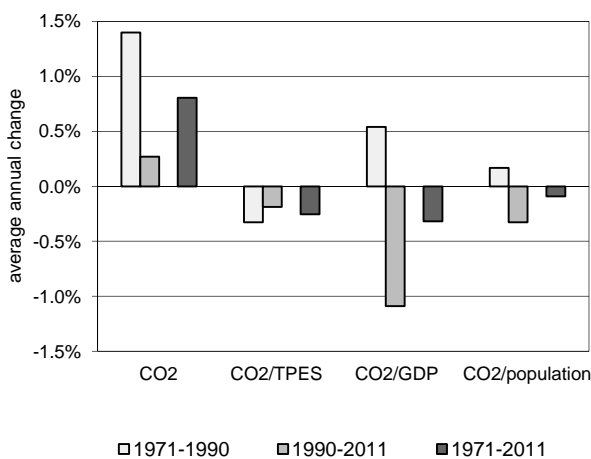
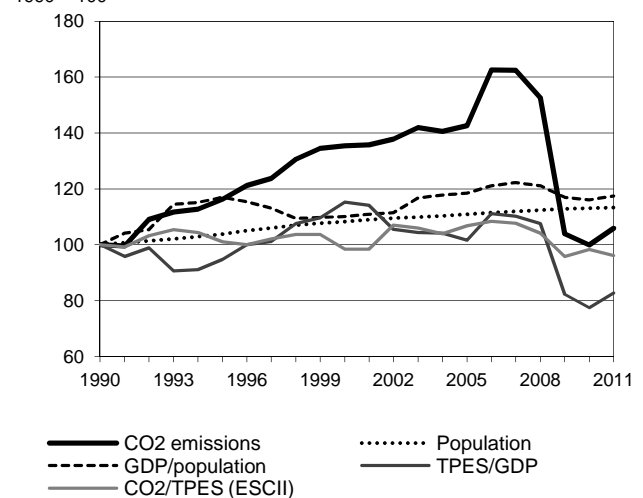


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Jamaica

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	7.18	8.34	9.72	10.24	7.46	7.17	7.60	5.8%
TPES (PJ)	117	134	160	156	127	118	128	10.1%
GDP (billion 2005 USD)	8.37	10.15	9.98	10.99	11.04	10.97	11.14	33.2%
GDP PPP (billion 2005 USD)	14.18	17.21	16.92	18.63	18.71	18.60	18.88	33.2%
Population (millions)	2.39	2.48	2.59	2.65	2.70	2.70	2.71	13.3%
CO ₂ / TPES (tCO ₂ per TJ)	61.6	62.2	60.6	65.8	59.0	60.5	59.2	-3.9%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.86	0.82	0.97	0.93	0.68	0.65	0.68	-20.5%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.51	0.48	0.57	0.55	0.40	0.39	0.40	-20.5%
CO ₂ / population (tCO ₂ per capita)	3.00	3.36	3.75	3.86	2.77	2.65	2.80	-6.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	116	135	143	104	100	106	5.8%
Population	100	104	108	111	113	113	113	13.3%
GDP per population (GDP per capita)	100	117	110	118	117	116	117	17.5%
Energy intensity (TPES/GDP)	100	95	115	102	82	77	83	-17.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	101	98	107	96	98	96	-3.9%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.13	7.46	-	-	7.60	5.8%
Main activity producer elec. and heat	-	2.24	-	-	2.24	20.2%
Unallocated autoproducers	-	0.95	-	-	0.95	x
Other energy industry own use	-	0.10	-	-	0.10	-24.4%
Manufacturing industries and construction	0.13	0.14	-	-	0.27	-54.1%
Transport	-	2.09	-	-	2.09	94.4%
<i>of which: road</i>	-	1.44	-	-	1.44	98.3%
Other	-	1.94	-	-	1.94	-44.7%
<i>of which: residential</i>	-	0.28	-	-	0.28	28.6%
Reference Approach	0.13	7.45	-	-	7.59	7.2%
Diff. due to losses and/or transformation	-	-0.00	-	-	-0.00	
Statistical differences	-	-0.00	-	-	-0.00	
<i>Memo: international marine bunkers</i>	-	0.90	-	-	0.90	802.8%
<i>Memo: international aviation bunkers</i>	-	0.57	-	-	0.57	23.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - oil	2.24	20.2%	22.2	22.2
Non-specified other - oil	1.67	-49.5%	16.6	38.8
Road - oil	1.44	98.3%	14.3	53.2
Unallocated autoproducers - oil	0.95	x	9.5	62.6
Other transport - oil	0.65	86.2%	6.4	69.1
Residential - oil	0.28	28.6%	2.8	71.8
Manufacturing industries - oil	0.14	-70.6%	1.4	73.2
Manufacturing industries - coal/peat	0.13	7.7%	1.3	74.5
Other energy industry own use - oil	0.10	-24.4%	1.0	75.6
<i>Memo: total CO₂ from fuel combustion</i>	<i>7.60</i>	<i>5.8%</i>	<i>75.6</i>	<i>75.6</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Japan

Figure 1. CO₂ emissions by fuel

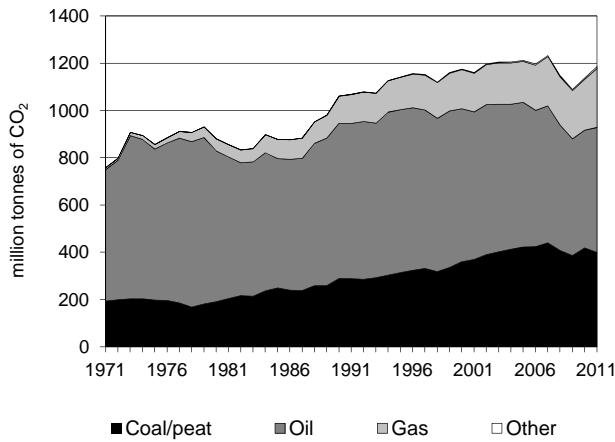


Figure 2. CO₂ emissions by sector

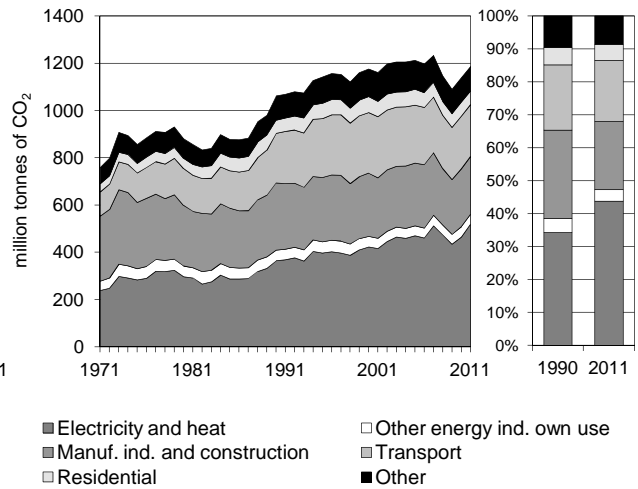


Figure 3. Reference vs Sectoral Approach

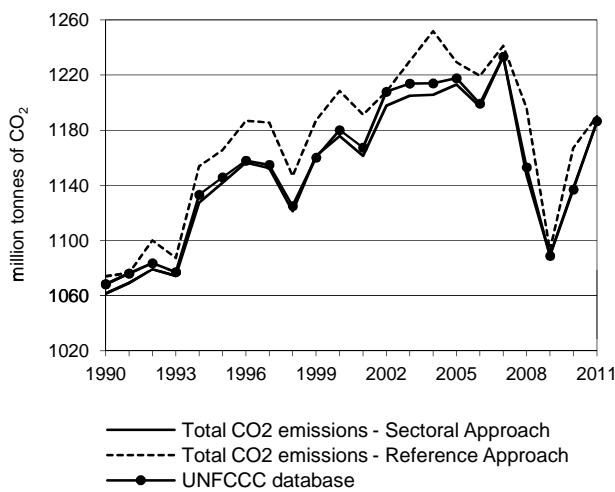


Figure 4. Electricity generation by fuel

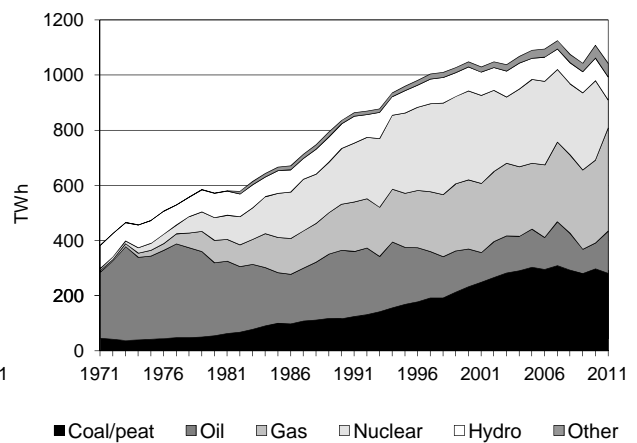


Figure 5. Changes in selected indicators *

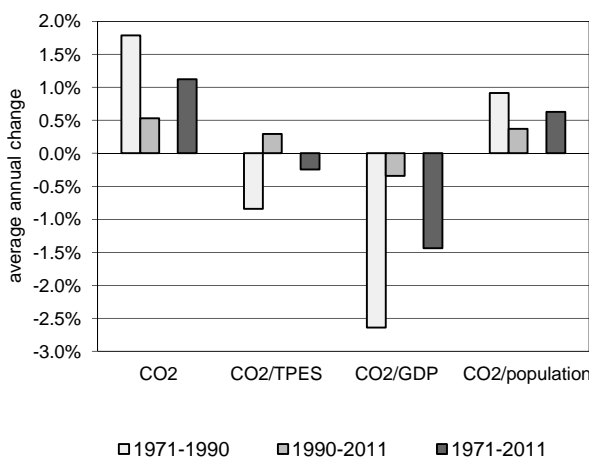
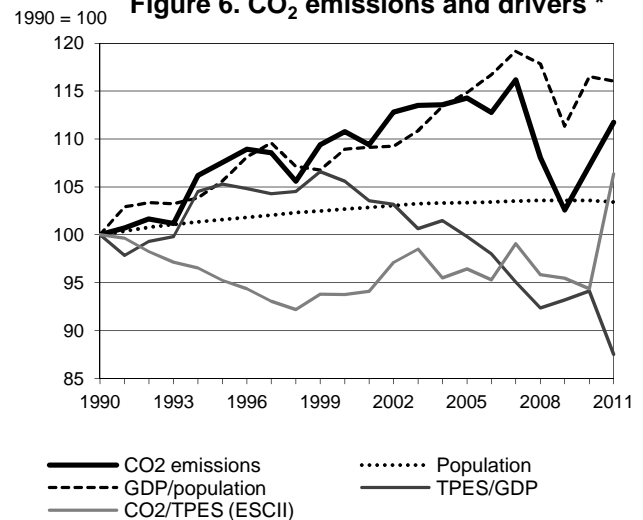


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Japan *

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	1 061.57	1 141.90	1 175.83	1 213.03	1 089.09	1 138.01	1 186.04	11.7%
TPES (PJ)	18 394	20 777	21 728	21 794	19 769	20 896	19 321	5.0%
GDP (billion 2005 USD)	3 851.27	4 132.19	4 308.10	4 571.88	4 441.84	4 648.48	4 621.97	20.0%
GDP PPP (billion 2005 USD)	3 276.52	3 515.51	3 665.17	3 889.58	3 778.95	3 954.76	3 932.20	20.0%
Population (millions)	123.61	125.57	126.93	127.76	128.03	128.04	127.83	3.4%
CO ₂ / TPES (tCO ₂ per TJ)	57.7	55.0	54.1	55.7	55.1	54.5	61.4	6.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.28	0.28	0.27	0.27	0.25	0.24	0.26	-6.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.32	0.32	0.32	0.31	0.29	0.29	0.30	-6.9%
CO ₂ / population (tCO ₂ per capita)	8.59	9.09	9.26	9.50	8.51	8.89	9.28	8.0%
CO₂ emissions and drivers - Kaya decomposition (1990=100) **								
CO ₂ emissions	100	108	111	114	103	107	112	11.7%
Population	100	102	103	103	104	104	103	3.4%
GDP per population (GDP per capita)	100	106	109	115	111	117	116	16.0%
Energy intensity (TPES/GDP)	100	105	106	100	93	94	88	-12.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	94	96	95	94	106	6.4%

* Please see Part I, Chapter 1 for revisions provided by the Japanese Administration and for methodological notes. ** Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 90-11
Sectoral Approach	400.00	528.69	249.38	7.97	1 186.04	11.7%
Main activity producer elec. and heat	214.66	77.44	159.01	1.95	453.06	47.1%
Unallocated autoproducers	44.06	14.16	5.41	2.79	66.42	18.4%
Other energy industry own use	16.74	22.37	2.62	-	41.73	-7.2%
Manufacturing industries and construction	122.52	98.81	20.22	3.23	244.78	-14.1%
Transport	-	219.65	-	-	219.65	4.8%
<i>of which: road</i>	-	198.54	-	-	198.54	6.2%
Other	2.01	96.27	62.12	-	160.40	1.5%
<i>of which: residential</i>	-	36.80	21.42	-	58.22	4.3%
Reference Approach	416.37	532.46	233.32	7.93	1 190.08	10.8%
Diff. due to losses and/or transformation	9.14	1.17	- 3.55	0.05	6.80	
Statistical differences	7.23	2.61	- 12.51	- 0.09	- 2.77	
<i>Memo: international marine bunkers</i>	-	13.12	-	-	13.12	-25.7%
<i>Memo: international aviation bunkers</i>	-	18.30	-	-	18.30	37.5%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	214.66	118.3%	16.4	16.4
Road - oil	198.54	6.2%	15.2	31.6
Main activity prod. elec. and heat - gas	159.01	105.7%	12.2	43.8
Manufacturing industries - coal/peat	122.52	-14.2%	9.4	53.1
Manufacturing industries - oil	98.81	-25.7%	7.6	60.7
Main activity prod. elec. and heat - oil	77.44	-41.3%	5.9	66.6
Non-specified other - oil	59.47	-33.4%	4.5	71.2
Unallocated autoproducers - coal/peat	44.06	46.4%	3.4	74.6
Non-specified other - gas	40.70	347.9%	3.1	77.7
<i>Memo: total CO₂ from fuel combustion</i>	<i>1186.04</i>	<i>11.7%</i>	<i>90.7</i>	<i>90.7</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Jordan

Figure 1. CO₂ emissions by fuel

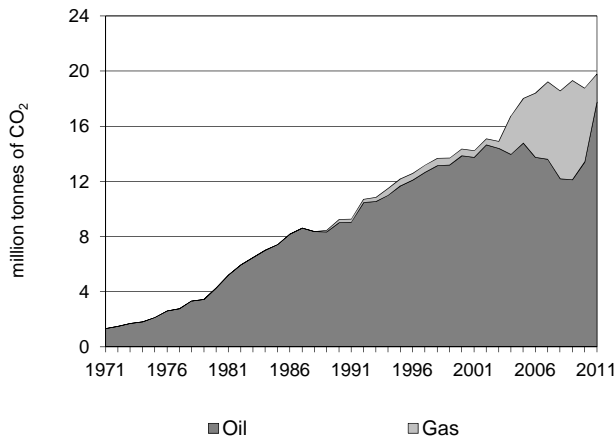


Figure 2. CO₂ emissions by sector

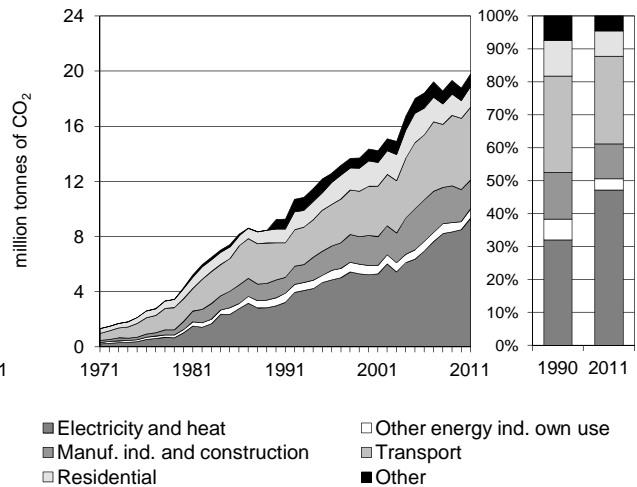


Figure 3. Reference vs Sectoral Approach

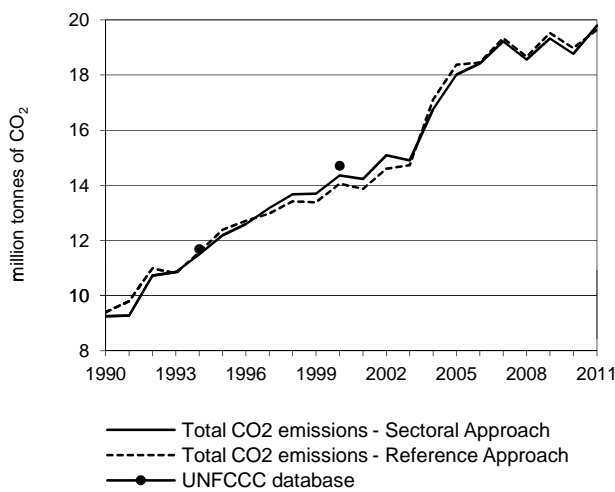


Figure 4. Electricity generation by fuel

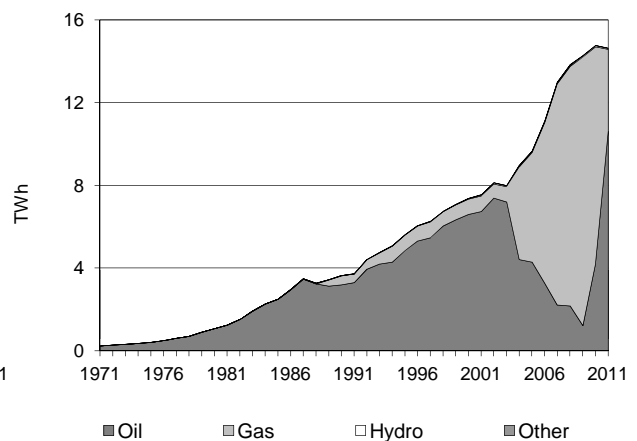


Figure 5. Changes in selected indicators *

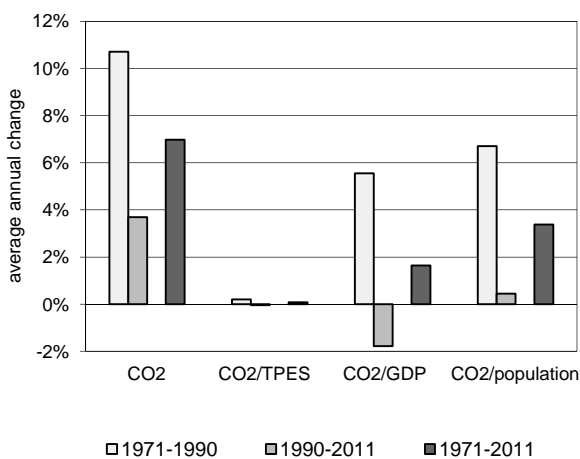
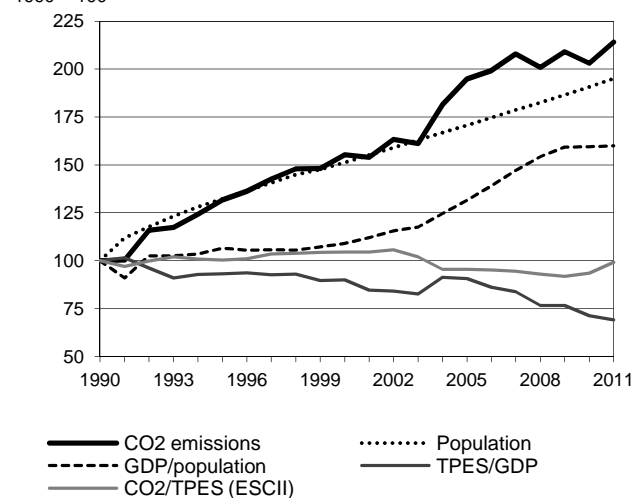


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Jordan

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	9.24	12.19	14.36	18.02	19.32	18.77	19.80	114.1%
TPES (PJ)	137	180	204	280	312	297	296	115.8%
GDP (billion 2005 USD)	5.60	7.90	9.25	12.59	16.65	17.04	17.48	212.0%
GDP PPP (billion 2005 USD)	10.44	14.71	17.23	23.46	31.03	31.74	32.56	212.0%
Population (millions)	3.17	4.20	4.80	5.41	5.92	6.05	6.18	95.0%
CO ₂ / TPES (tCO ₂ per TJ)	67.4	67.7	70.5	64.5	61.9	63.1	66.9	-0.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.65	1.54	1.55	1.43	1.16	1.10	1.13	-31.4%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.89	0.83	0.83	0.77	0.62	0.59	0.61	-31.4%
CO ₂ / population (tCO ₂ per capita)	2.92	2.91	2.99	3.33	3.27	3.10	3.20	9.8%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	132	155	195	209	203	214	114.1%
Population	100	132	151	171	187	191	195	95.0%
GDP per population (GDP per capita)	100	107	109	132	159	159	160	60.0%
Energy intensity (TPES/GDP)	100	93	90	91	77	71	69	-30.8%
Carbon intensity: ESCII (CO ₂ /TPES)	100	100	105	96	92	94	99	-0.8%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	17.76	2.04	-	19.80	114.1%
Main activity producer elec. and heat	-	7.06	2.04	-	9.10	242.0%
Unallocated autoproducers	-	0.23	-	-	0.23	-23.5%
Other energy industry own use	-	0.67	-	-	0.67	15.4%
Manufacturing industries and construction	-	2.09	-	-	2.09	60.1%
Transport	-	5.27	-	-	5.27	95.3%
<i>of which: road</i>	-	5.25	-	-	5.25	97.8%
Other	-	2.42	-	-	2.42	43.3%
<i>of which: residential</i>	-	1.51	-	-	1.51	51.9%
Reference Approach	-	17.60	2.04	-	19.64	108.9%
Diff. due to losses and/or transformation	-	-0.13	-	-	-0.13	
Statistical differences	-	-0.03	-	-	-0.03	
<i>Memo: international marine bunkers</i>	-	0.03	-	-	0.03	..
<i>Memo: international aviation bunkers</i>	-	0.99	-	-	0.99	49.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - oil	7.06	191.4%	28.8	28.8
Road - oil	5.25	97.8%	21.4	50.2
Manufacturing industries - oil	2.09	60.1%	8.5	58.7
Main activity prod. elec. and heat - gas	2.04	759.4%	8.3	67.0
Residential - oil	1.51	51.9%	6.2	73.2
Non-specified other - oil	0.90	30.9%	3.7	76.9
Other energy industry own use - oil	0.67	15.4%	2.7	79.6
Unallocated autoproducers - oil	0.23	-23.5%	0.9	80.5
Other transport - oil	0.02	-53.3%	0.1	80.6
<i>Memo: total CO₂ from fuel combustion</i>	<i>19.80</i>	<i>114.1%</i>	<i>80.6</i>	<i>80.6</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Kazakhstan

Figure 1. CO₂ emissions by fuel

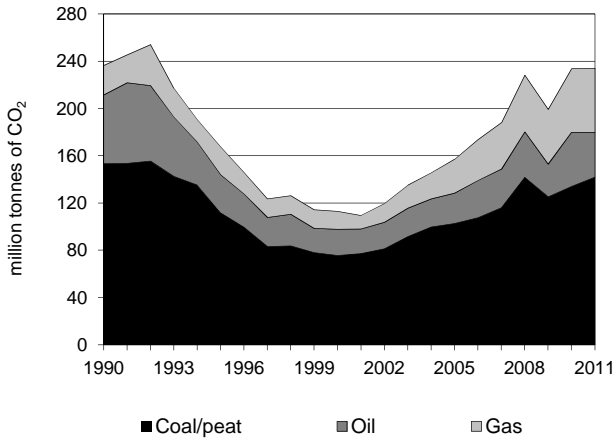


Figure 2. CO₂ emissions by sector

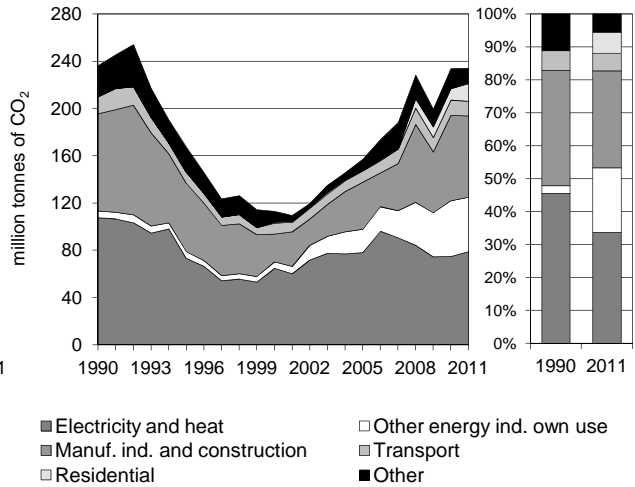


Figure 3. Reference vs Sectoral Approach

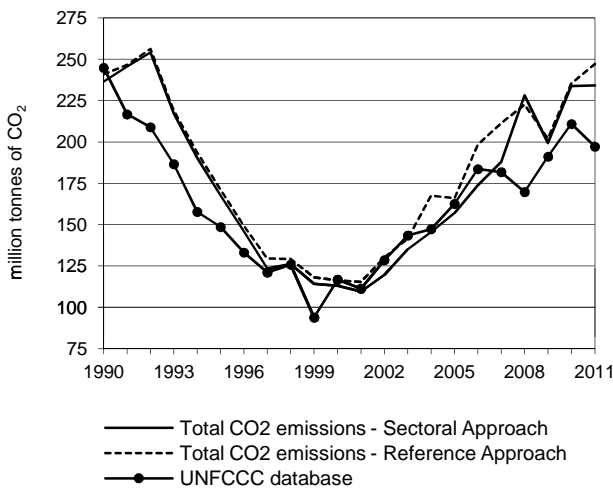


Figure 4. Electricity generation by fuel

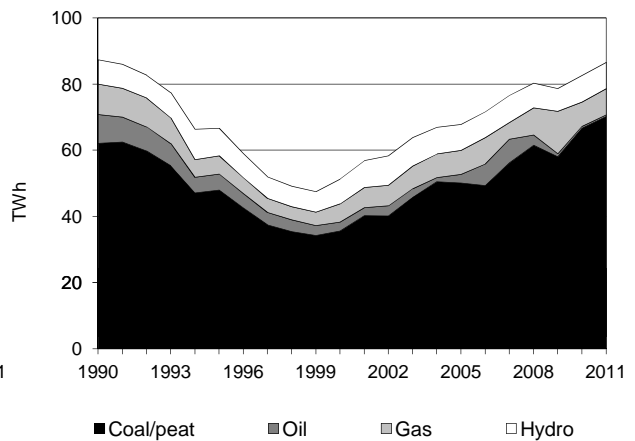


Figure 5. Changes in selected indicators *

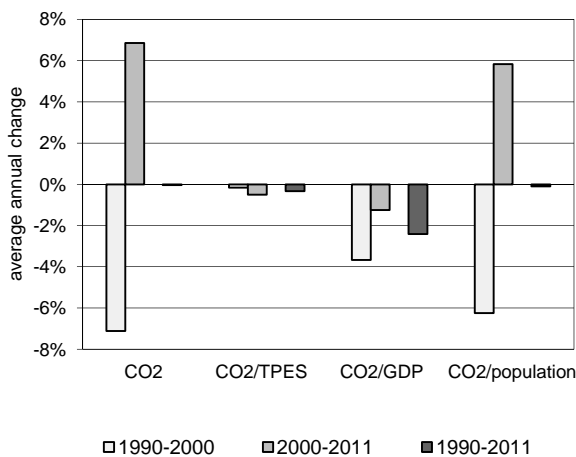
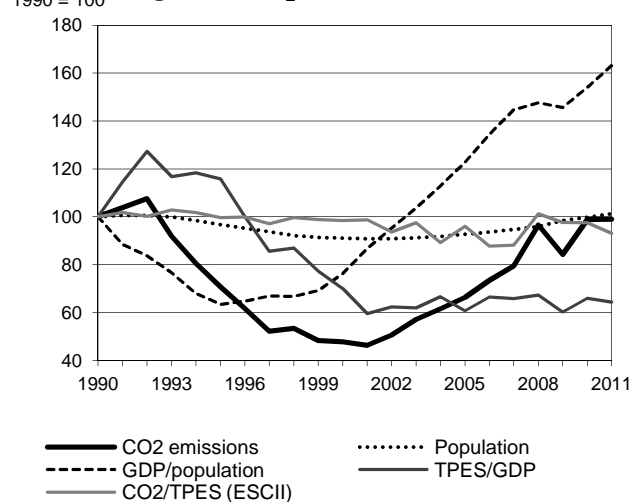


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Kazakhstan

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	236.42	167.52	113.00	157.05	199.35	233.70	234.18	-0.9%
TPES (PJ)	3 075	2 187	1 494	2 127	2 655	3 117	3 270	6.3%
GDP (billion 2005 USD)	50.24	30.85	34.88	57.12	71.99	77.25	83.04	65.3%
GDP PPP (billion 2005 USD)	115.89	71.16	80.46	131.77	166.06	178.18	191.54	65.3%
Population (millions)	16.35	15.82	14.88	15.15	16.09	16.32	16.56	1.3%
CO ₂ / TPES (tCO ₂ per TJ)	76.9	76.6	75.6	73.8	75.1	75.0	71.6	-6.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	4.71	5.43	3.24	2.75	2.77	3.03	2.82	-40.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	2.04	2.35	1.40	1.19	1.20	1.31	1.22	-40.1%
CO ₂ / population (tCO ₂ per capita)	14.46	10.59	7.59	10.37	12.39	14.32	14.14	-2.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	71	48	66	84	99	99	-0.9%
Population	100	97	91	93	98	100	101	1.3%
GDP per population (GDP per capita)	100	63	76	123	146	154	163	63.2%
Energy intensity (TPES/GDP)	100	116	70	61	60	66	64	-35.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	100	98	96	98	98	93	-6.8%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	142.07	37.88	54.22	-	234.18	-0.9%
Main activity producer elec. and heat	73.74	0.50	4.56	-	78.79	-26.8%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	1.91	3.11	41.03	-	46.05	720.6%
Manufacturing industries and construction	53.72	10.48	4.75	-	68.95	-16.4%
Transport	-	12.46	-	-	12.46	-12.7%
<i>of which: road</i>	-	11.67	-	-	11.67	-2.4%
Other	12.70	11.34	3.88	-	27.92	5.6%
<i>of which: residential</i>	8.94	3.39	2.59	-	14.93	x
Reference Approach	146.69	43.92	56.48	-	247.10	2.6%
Diff. due to losses and/or transformation	10.23	4.57	2.26	-	17.06	
Statistical differences	- 5.60	1.47	- 0.00	-	- 4.13	
<i>Memo: international marine bunkers</i>	-	0.06	-	-	0.06	..
<i>Memo: international aviation bunkers</i>	-	0.74	-	-	0.74	-72.5%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	73.74	-21.2%	21.7	21.7
Manufacturing industries - coal/peat	53.72	-10.1%	15.8	37.6
Other energy industry own use - gas	41.03	+	12.1	49.7
Road - oil	11.67	-2.4%	3.4	53.1
Manufacturing industries - oil	10.48	-53.8%	3.1	56.2
Residential - coal/peat	8.94	x	2.6	58.9
Non-specified other - oil	7.94	-4.1%	2.3	61.2
Manufacturing industries - gas	4.75	x	1.4	62.6
Main activity prod. elec. and heat - gas	4.56	30.8%	1.3	63.9
<i>Memo: total CO₂ from fuel combustion</i>	<i>234.18</i>	<i>-0.9%</i>	<i>69.1</i>	<i>69.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Kenya

Figure 1. CO₂ emissions by fuel

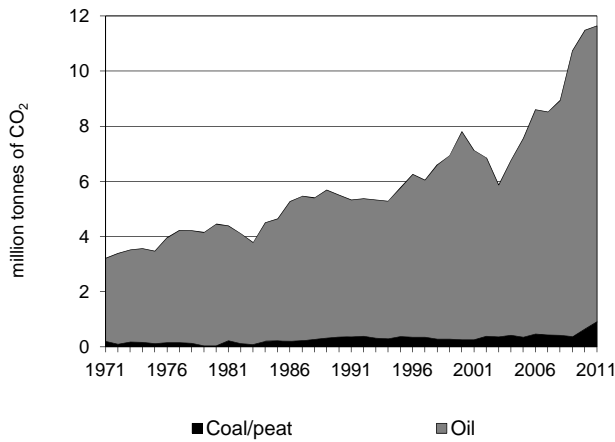


Figure 2. CO₂ emissions by sector

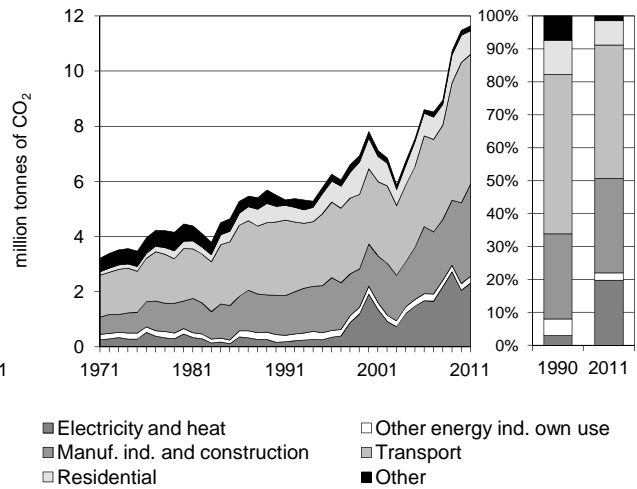


Figure 3. Reference vs Sectoral Approach

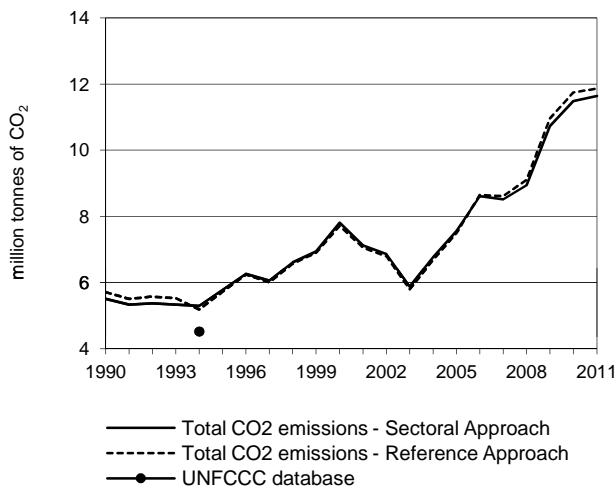


Figure 4. Electricity generation by fuel

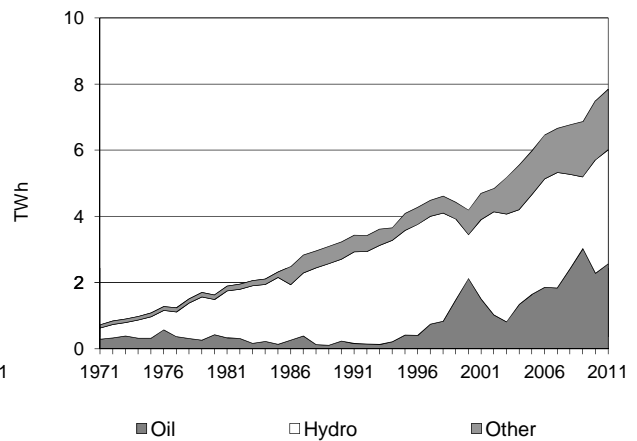


Figure 5. Changes in selected indicators *

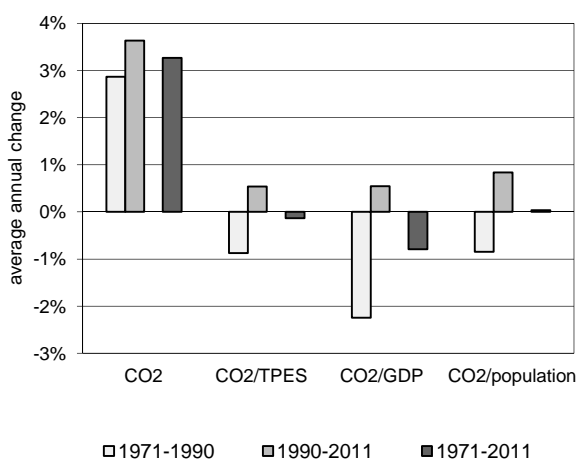
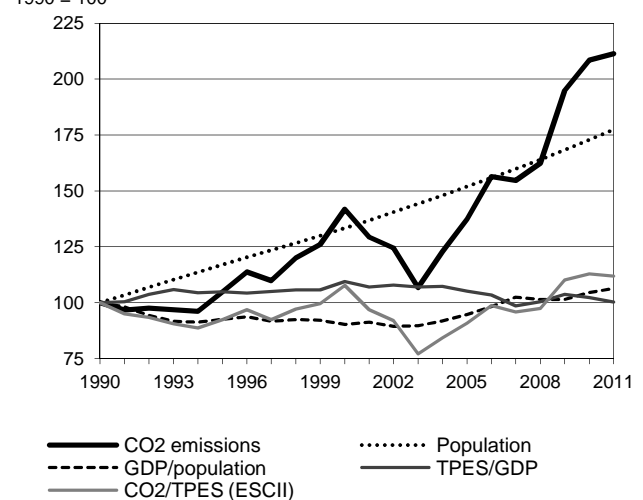


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Kenya

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	5.51	5.77	7.81	7.56	10.73	11.48	11.64	111.4%
TPES (PJ)	447	507	588	676	791	826	845	89.0%
GDP (billion 2005 USD)	13.02	14.09	15.67	18.74	22.24	23.52	24.55	88.5%
GDP PPP (billion 2005 USD)	33.32	36.06	40.11	47.95	56.90	60.18	62.81	88.5%
Population (millions)	23.45	27.43	31.25	35.62	39.46	40.51	41.61	77.5%
CO ₂ / TPES (tCO ₂ per TJ)	12.3	11.4	13.3	11.2	13.6	13.9	13.8	11.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.42	0.41	0.50	0.40	0.48	0.49	0.47	12.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.17	0.16	0.19	0.16	0.19	0.19	0.19	12.1%
CO ₂ / population (tCO ₂ per capita)	0.23	0.21	0.25	0.21	0.27	0.28	0.28	19.1%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	105	142	137	195	209	211	111.4%
Population	100	117	133	152	168	173	177	77.5%
GDP per population (GDP per capita)	100	93	90	95	101	105	106	6.2%
Energy intensity (TPES/GDP)	100	105	109	105	104	102	100	0.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	92	108	91	110	113	112	11.8%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.91	10.73	-	-	11.64	111.4%
Main activity producer elec. and heat ***	-	2.31	-	-	2.31	+
Unallocated autoproducers ***	..	..	..	..	..	..
Other energy industry own use	-	0.25	-	-	0.25	-9.5%
Manufacturing industries and construction	0.91	2.43	-	-	3.34	134.9%
Transport	-	4.71	-	-	4.71	76.7%
<i>of which: road</i>	-	4.46	-	-	4.46	76.5%
Other	-	1.03	-	-	1.03	5.7%
<i>of which: residential</i>	-	0.86	-	-	0.86	51.5%
Reference Approach	0.91	10.95	-	-	11.86	107.9%
Diff. due to losses and/or transformation	-	0.22	-	-	0.22	
Statistical differences	-	-	-	-	-	
<i>Memo: international marine bunkers</i>	-	0.08	-	-	0.08	-84.9%
<i>Memo: international aviation bunkers</i>	-	2.12	-	-	2.12	155.1%

** Other includes industrial waste and non-renewable municipal waste.

*** Emissions from autoproducers in 2011 have been included with main activity producer electricity and heat.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ****	Cumulative total (%)
Road - oil	4.46	76.5%	8.6	8.6
Manufacturing industries - oil	2.43	129.1%	4.7	13.2
Main activity prod. elec. and heat - oil	2.31	+	4.4	17.7
Manufacturing industries - coal/peat	0.91	151.7%	1.7	19.4
Residential - oil	0.86	51.5%	1.7	21.1
Other energy industry own use - oil	0.25	-9.5%	0.5	21.6
Other transport - oil	0.24	79.5%	0.5	22.0
Non-specified other - oil	0.17	-58.1%	0.3	22.4
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>11.64</i>	<i>111.4%</i>	<i>22.4</i>	<i>22.4</i>

**** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Democratic People's Republic of Korea

Figure 1. CO₂ emissions by fuel

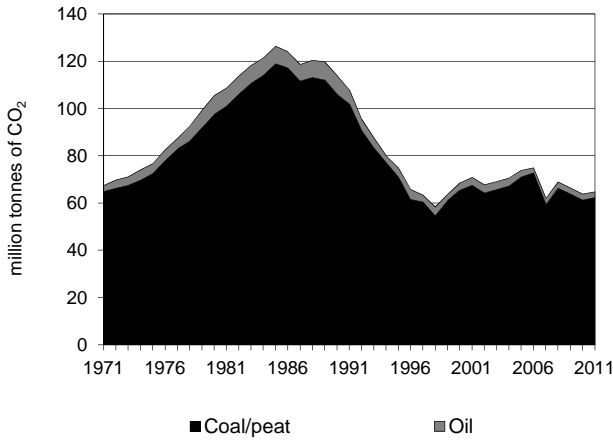


Figure 2. CO₂ emissions by sector

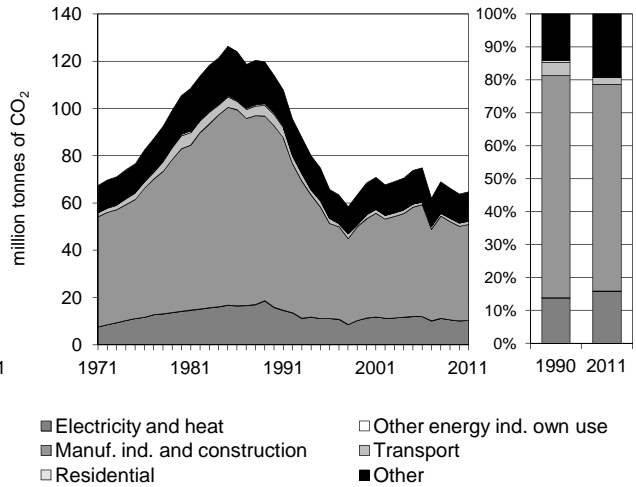


Figure 3. Reference vs Sectoral Approach

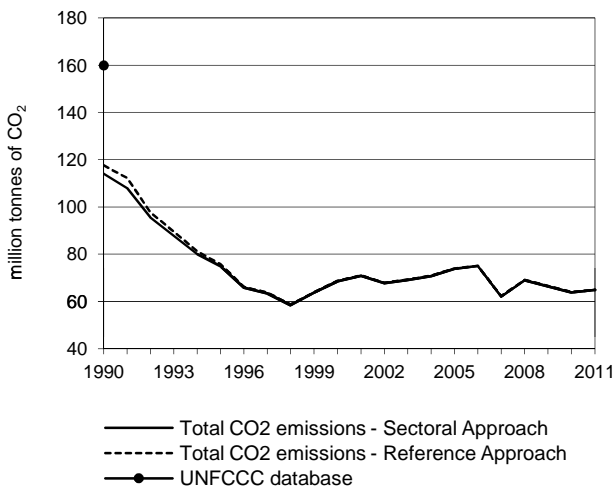


Figure 4. Electricity generation by fuel

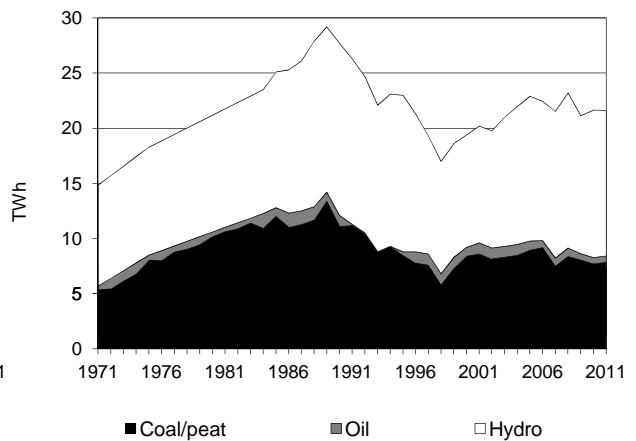


Figure 5. Changes in selected indicators *

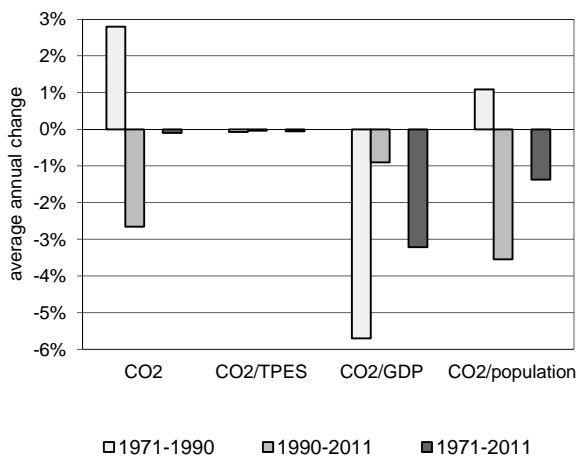
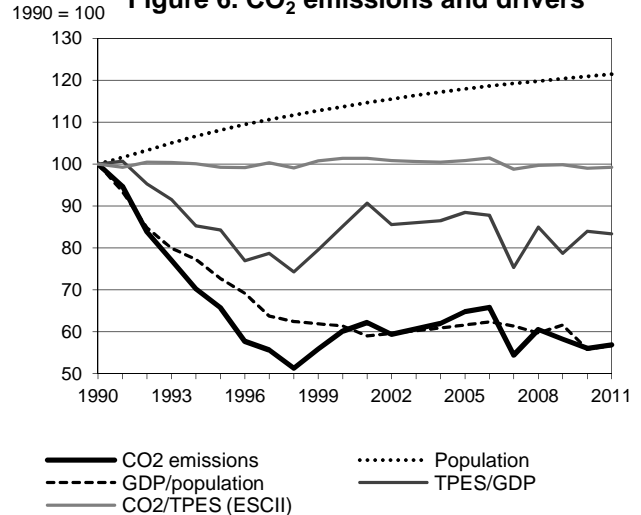


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Democratic People's Republic of Korea

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	114.01	74.86	68.57	73.82	66.33	63.82	64.82	-43.1%
TPES (PJ)	1 391	920	826	893	810	787	797	-42.7%
GDP (billion 2005 USD)	40.89	32.11	28.50	29.69	30.29	27.56	28.11	-31.2%
GDP PPP (billion 2005 USD)	147.99	116.23	103.17	107.48	109.63	99.76	101.76	-31.2%
Population (millions)	20.14	21.77	22.89	23.75	24.24	24.35	24.45	21.4%
CO ₂ / TPES (tCO ₂ per TJ)	82.0	81.3	83.1	82.7	81.8	81.1	81.3	-0.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	2.79	2.33	2.41	2.49	2.19	2.32	2.31	-17.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.77	0.64	0.66	0.69	0.61	0.64	0.64	-17.3%
CO ₂ / population (tCO ₂ per capita)	5.66	3.44	3.00	3.11	2.74	2.62	2.65	-53.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	66	60	65	58	56	57	-43.1%
Population	100	108	114	118	120	121	121	21.4%
GDP per population (GDP per capita)	100	73	61	62	62	56	57	-43.4%
Energy intensity (TPES/GDP)	100	84	85	88	79	84	83	-16.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	99	101	101	100	99	99	-0.8%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	62.27	2.56	-	-	64.82	-43.1%
Main activity producer elec. and heat	9.48	0.80	-	-	10.28	-34.4%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	0.05	-	-	0.05	-76.9%
Manufacturing industries and construction	40.37	0.29	-	-	40.65	-47.1%
Transport	-	1.31	-	-	1.31	-71.8%
<i>of which: road</i>	-	1.31	-	-	1.31	-71.8%
Other	12.42	0.12	-	-	12.54	-24.8%
<i>of which: residential</i>	-	0.12	-	-	0.12	-78.2%
Reference Approach	62.33	2.58	-	-	64.92	-44.8%
Diff. due to losses and/or transformation	0.07	0.03	-	-	0.10	
Statistical differences	- 0.00	- 0.00	-	-	- 0.00	
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	-	-	-	-	-

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Manufacturing industries - coal/peat	40.37	-46.6%	42.9	42.9
Non-specified other sectors - coal/peat	12.42	-23.1%	13.2	56.1
Main activity prod. elec. and heat - coal/peat	9.48	-34.0%	10.1	66.2
Road - oil	1.31	-71.8%	1.4	67.6
Main activity prod. elec. and heat - oil	0.80	-39.2%	0.9	68.5
Manufacturing industries - oil	0.29	-76.0%	0.3	68.8
Residential - oil	0.12	-78.2%	0.1	68.9
Other energy industry own use - oil	0.05	-76.9%	0.0	68.9
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>64.82</i>	<i>-43.1%</i>	<i>68.9</i>	<i>68.9</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Korea

Figure 1. CO₂ emissions by fuel

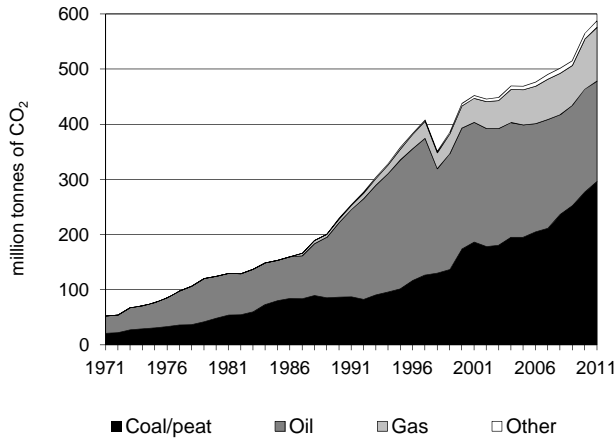


Figure 2. CO₂ emissions by sector

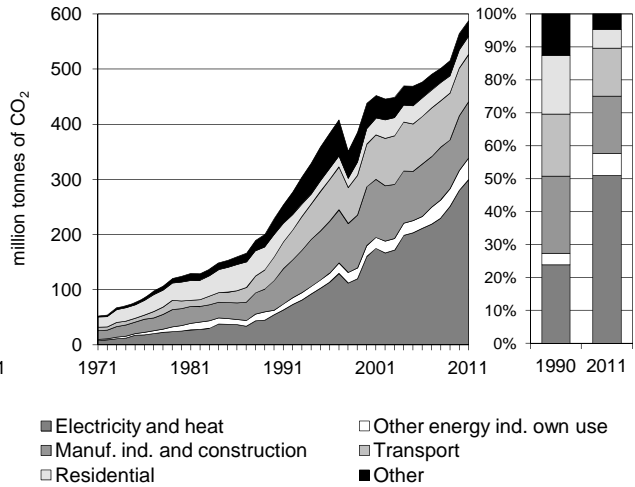


Figure 3. Reference vs Sectoral Approach

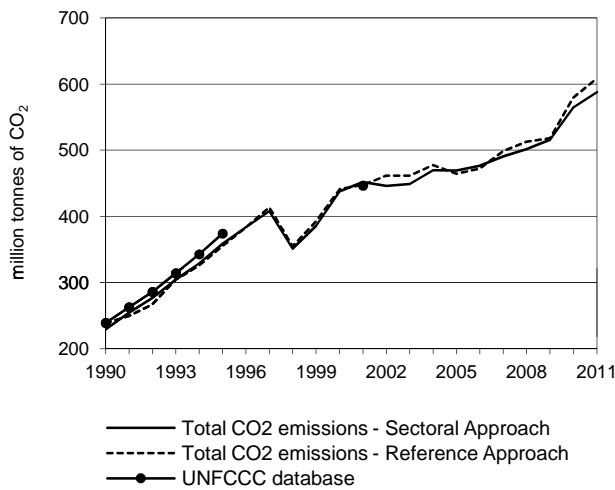


Figure 4. Electricity generation by fuel

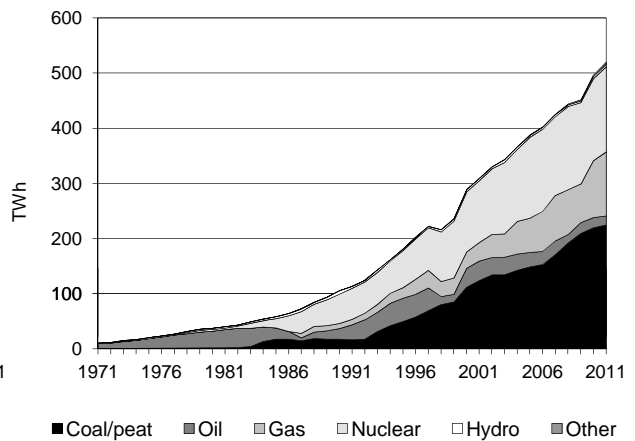


Figure 5. Changes in selected indicators *

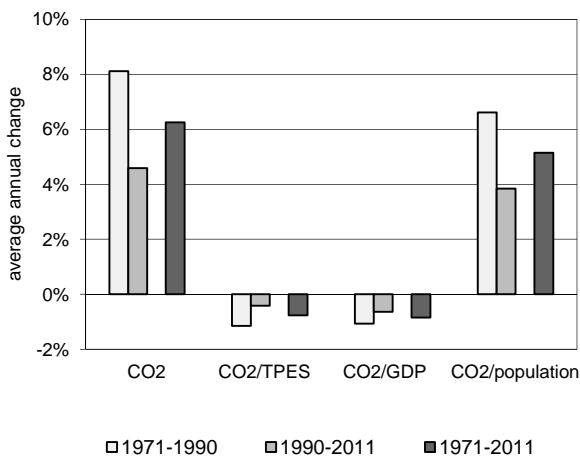
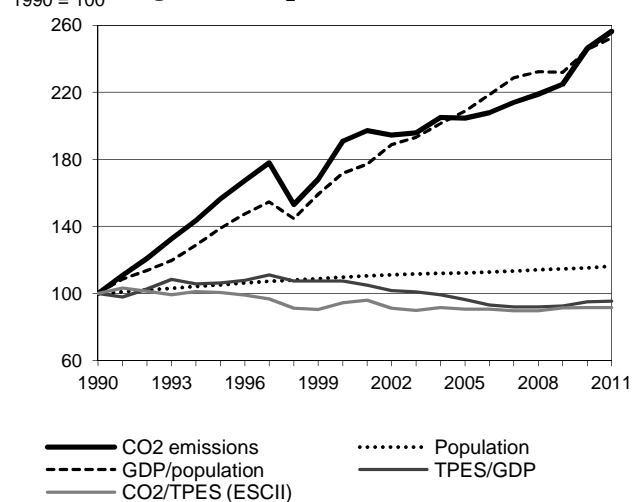


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Korea

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	229.30	358.65	437.72	469.12	515.62	564.47	587.73	156.3%
TPES (PJ)	3 897	6 061	7 878	8 800	9 595	10 465	10 904	179.8%
GDP (billion 2005 USD)	360.30	526.72	678.27	844.86	958.51	1 019.09	1 056.12	193.1%
GDP PPP (billion 2005 USD)	467.71	683.75	880.48	1 096.74	1 244.26	1 322.91	1 370.98	193.1%
Population (millions)	42.87	45.09	47.01	48.14	49.18	49.41	49.78	16.1%
CO ₂ / TPES (tCO ₂ per TJ)	58.8	59.2	55.6	53.3	53.7	53.9	53.9	-8.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.64	0.68	0.65	0.56	0.54	0.55	0.56	-12.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.49	0.52	0.50	0.43	0.41	0.43	0.43	-12.6%
CO ₂ / population (tCO ₂ per capita)	5.35	7.95	9.31	9.75	10.48	11.42	11.81	120.7%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	156	191	205	225	246	256	156.3%
Population	100	105	110	112	115	115	116	16.1%
GDP per population (GDP per capita)	100	139	172	209	232	245	252	152.4%
Energy intensity (TPES/GDP)	100	106	107	96	93	95	95	-4.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	101	94	91	91	92	92	-8.4%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	295.98	182.25	97.81	11.68	587.73	156.3%
Main activity producer elec. and heat	197.28	7.81	45.46	-	250.55	627.3%
Unallocated autoproducers	39.16	5.82	1.36	2.80	49.13	141.2%
Other energy industry own use	22.67	15.76	0.59	-	39.02	388.1%
Manufacturing industries and construction	33.61	42.44	19.34	6.87	102.26	90.8%
Transport	-	83.09	2.51	-	85.60	97.9%
<i>of which: road</i>	-	79.02	2.51	-	81.53	158.5%
Other	3.25	27.33	28.56	2.02	61.16	-12.1%
<i>of which: residential</i>	3.25	9.42	20.81	-	33.48	-17.8%
Reference Approach	311.45	188.39	97.17	11.68	608.69	155.1%
Diff. due to losses and/or transformation	11.45	7.08	-1.18	-	17.35	
Statistical differences	4.02	-0.94	0.53	-0.00	3.60	
<i>Memo: international marine bunkers</i>	-	27.96	-	-	27.96	430.7%
<i>Memo: international aviation bunkers</i>	-	11.99	-	-	11.99	+

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	197.28	+	29.2	29.2
Road - oil	79.02	150.5%	11.7	40.9
Main activity prod. elec. and heat - gas	45.46	855.0%	6.7	47.6
Manufacturing industries - oil	42.44	11.7%	6.3	53.9
Unallocated autoproducers - coal/peat	39.16	92.3%	5.8	59.7
Manufacturing industries - coal/peat	33.61	136.5%	5.0	64.7
Other energy industry - coal/peat	22.67	692.3%	3.4	68.0
Residential - gas	20.81	+	3.1	71.1
Manufacturing industries - gas	19.34	+	2.9	74.0
<i>Memo: total CO₂ from fuel combustion</i>	<i>587.73</i>	<i>156.3%</i>	<i>87.0</i>	<i>87.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Kosovo

Figure 1. CO₂ emissions by fuel

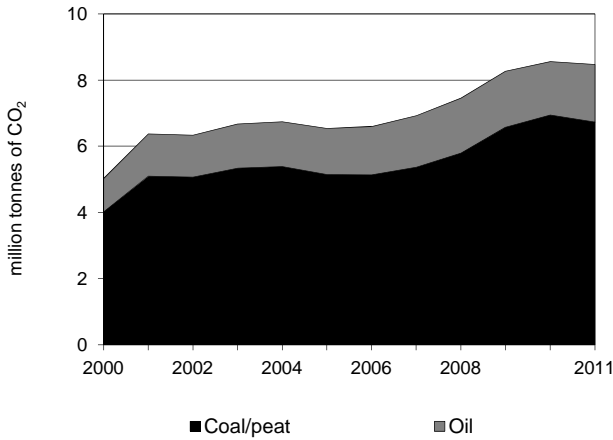


Figure 2. CO₂ emissions by sector

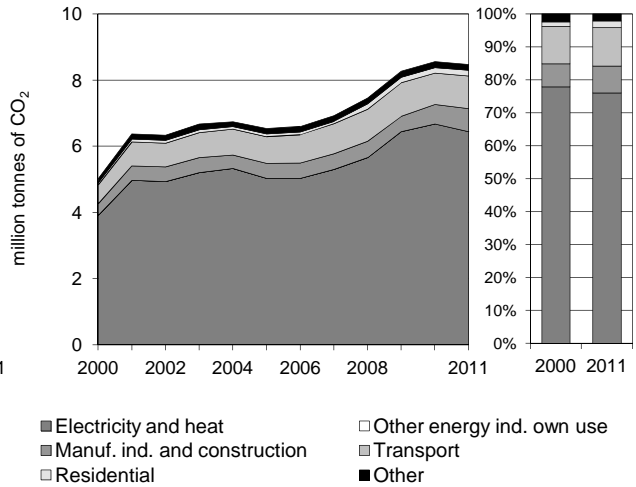


Figure 3. Reference vs Sectoral Approach

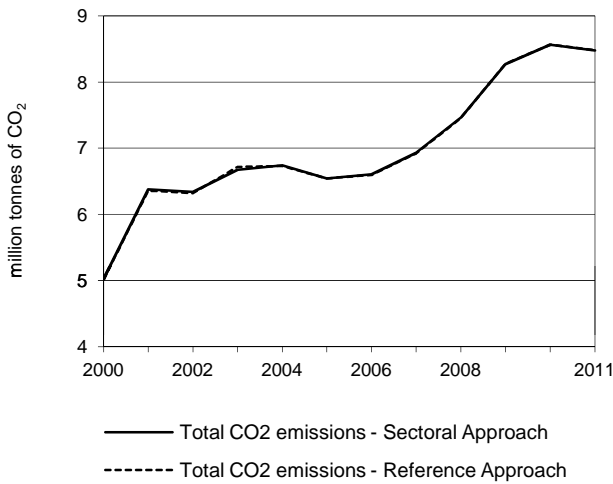


Figure 4. Electricity generation by fuel

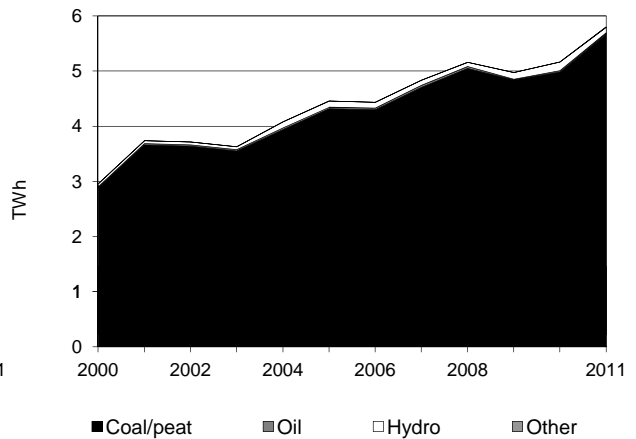


Figure 5. Changes in selected indicators *

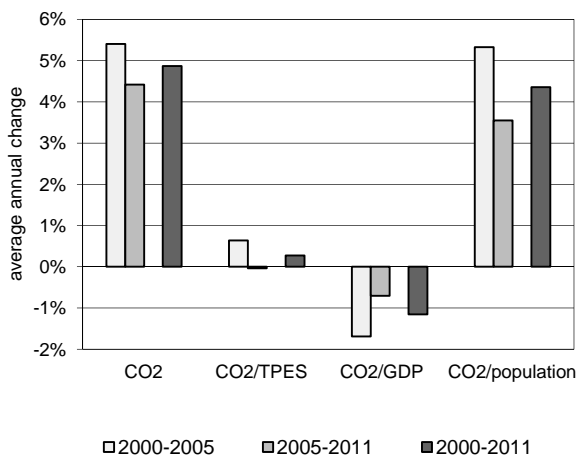
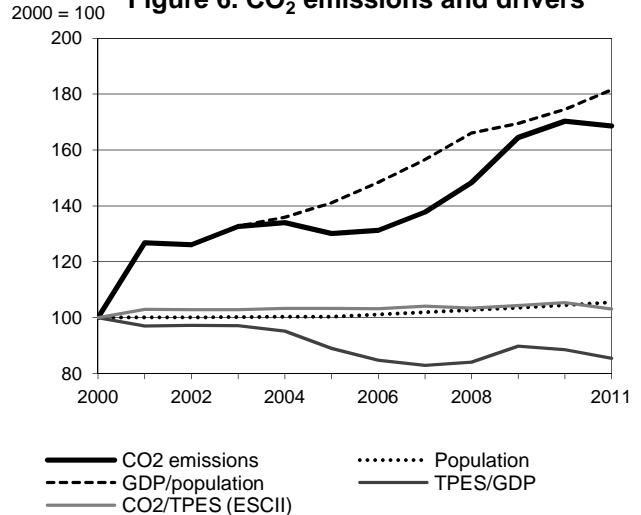


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Kosovo *

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 00-11
CO ₂ Sectoral Approach (MtCO ₂)	5.03	6.54	8.27	8.57	8.48	68.6%
TPES (PJ)	65	81	102	104	106	63.6%
GDP (billion 2005 USD)	2.64	3.74	4.64	4.82	5.06	91.5%
GDP PPP (billion 2005 USD)	6.64	9.40	11.65	12.11	12.71	91.5%
Population (millions)	1.70	1.71	1.76	1.78	1.79	5.5%
CO ₂ / TPES (tCO ₂ per TJ)	77.8	80.3	81.1	82.0	80.1	3.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.90	1.75	1.78	1.78	1.68	-12.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.76	0.70	0.71	0.71	0.67	-12.0%
CO ₂ / population (tCO ₂ per capita)	2.96	3.83	4.70	4.82	4.73	59.7%
CO₂ emissions and drivers - Kaya decomposition (2000=100) **								
CO ₂ emissions	100	130	164	170	169	68.6%
Population	100	100	104	104	106	5.5%
GDP per population (GDP per capita)	100	141	169	175	181	81.5%
Energy intensity (TPES/GDP)	100	89	90	89	85	-14.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	103	104	105	103	3.0%

* Prior to 2000, data for Kosovo were included in Serbia. ** Please see Part I, Chapter 1 for methodological notes. Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 00-11
Sectoral Approach	6.74	1.74	-	-	8.48	68.6%
Main activity producer elec. and heat	6.39	0.05	-	-	6.45	64.7%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	0.23	0.47	-	-	0.69	96.8%
Transport	-	0.99	-	-	0.99	72.6%
<i>of which: road</i>	-	0.98	-	-	0.98	73.0%
Other	0.11	0.24	-	-	0.35	84.6%
<i>of which: residential</i>	0.10	0.08	-	-	0.18	158.6%
Reference Approach	6.74	1.74	-	-	8.48	69.1%
Diff. due to losses and/or transformation	-	0.01	-	-	0.01	
Statistical differences	0.00	-0.01	-	-	-0.01	
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.04	-	-	0.04	x

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 00-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	6.39	65.3%	..	..
Road - oil	0.98	73.0%	..	..
Manufacturing industries - oil	0.47	90.1%	..	..
Manufacturing industries - coal/peat	0.23	112.2%	..	..
Non-specified other - oil	0.16	76.6%	..	..
Residential - coal/peat	0.10	602.3%	..	..
Residential - oil	0.08	44.3%	..	..
Main activity prod. elec. and heat - oil	0.05	13.4%	..	..
Non-specified other sectors - coal/peat	0.02	-47.6%	..	..
<i>Memo: total CO₂ from fuel combustion</i>	8.48	68.6%	-	-

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Kuwait

Figure 1. CO₂ emissions by fuel

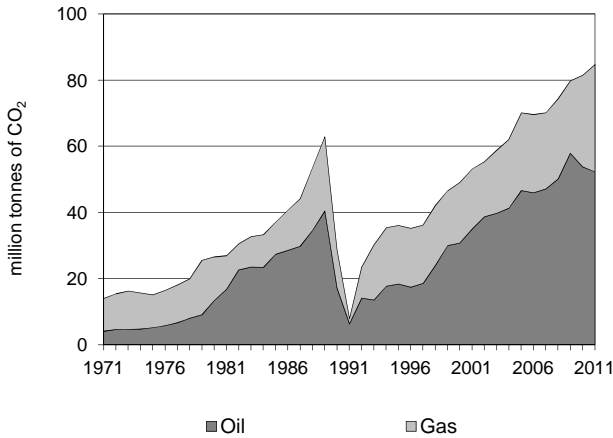


Figure 2. CO₂ emissions by sector

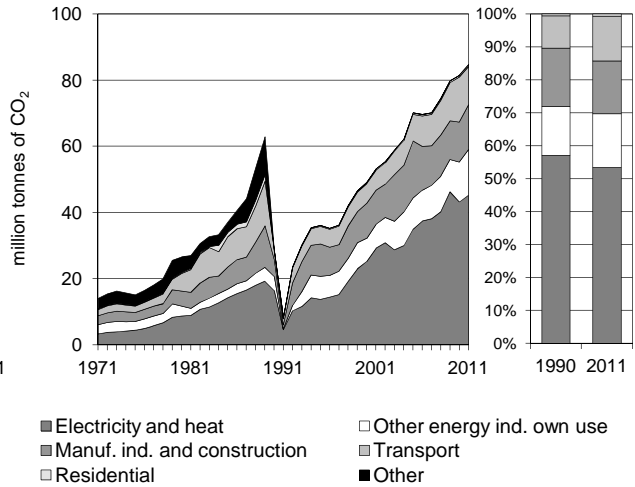


Figure 3. Reference vs Sectoral Approach

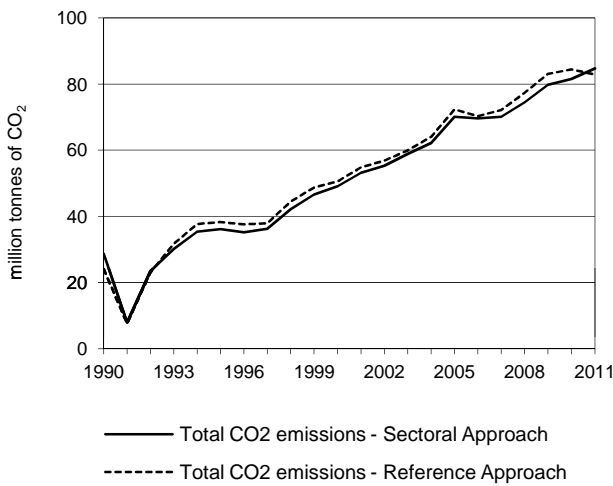


Figure 4. Electricity generation by fuel

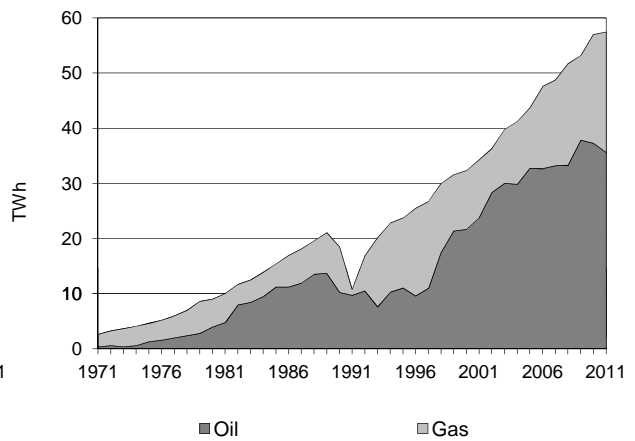


Figure 5. Changes in selected indicators *

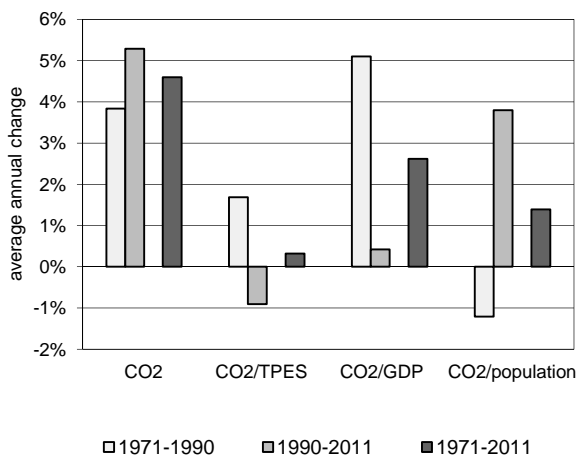
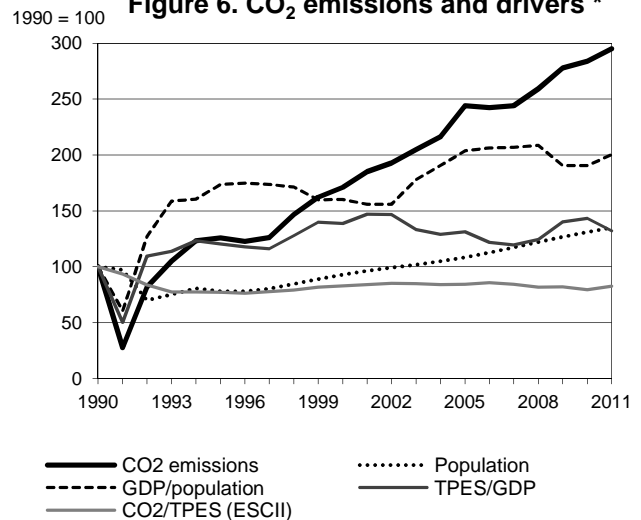


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Kuwait

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	28.72	36.11	49.12	70.13	79.80	81.49	84.74	195.1%
TPES (PJ)	381	623	787	1 105	1 290	1 364	1 362	257.0%
GDP (billion 2005 USD)	36.58	49.56	54.46	80.80	88.33	91.34	98.82	170.1%
GDP PPP (billion 2005 USD)	50.01	67.75	74.45	110.45	120.74	124.86	135.08	170.1%
Population (millions)	2.09	1.63	1.94	2.26	2.65	2.74	2.82	35.0%
CO ₂ / TPES (tCO ₂ per TJ)	75.3	58.0	62.4	63.4	61.9	59.7	62.2	-17.3%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.79	0.73	0.90	0.87	0.90	0.89	0.86	9.2%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.57	0.53	0.66	0.63	0.66	0.65	0.63	9.2%
CO ₂ / population (tCO ₂ per capita)	13.75	22.18	25.31	30.97	30.16	29.77	30.07	118.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	126	171	244	278	284	295	195.1%
Population	100	78	93	108	127	131	135	35.0%
GDP per population (GDP per capita)	100	174	160	204	191	190	200	100.2%
Energy intensity (TPES/GDP)	100	120	139	131	140	143	132	32.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	77	83	84	82	79	83	-17.3%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	52.31	32.43	-	84.74	195.1%
Main activity producer elec. and heat	-	32.70	12.54	-	45.23	175.9%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	1.25	12.61	-	13.86	225.1%
Manufacturing industries and construction	-	6.26	7.29	-	13.55	166.4%
Transport	-	11.55	-	-	11.55	310.7%
<i>of which: road</i>	-	11.55	-	-	11.55	310.7%
Other	-	0.54	-	-	0.54	236.3%
<i>of which: residential</i>	-	0.54	-	-	0.54	236.3%
Reference Approach	-	50.49	32.43	-	82.92	244.7%
Diff. due to losses and/or transformation	-	-2.43	-	-	-2.43	
Statistical differences	-	0.62	-	-	0.62	
<i>Memo: international marine bunkers</i>	-	3.26	-	-	3.26	489.3%
<i>Memo: international aviation bunkers</i>	-	2.16	-	-	2.16	321.7%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - oil	32.70	166.7%	31.8	31.8
Other energy industry own use - gas	12.61	250.7%	12.3	44.1
Main activity prod. elec. and heat - gas	12.54	203.3%	12.2	56.2
Road - oil	11.55	310.7%	11.2	67.5
Manufacturing industries - gas	7.29	93.0%	7.1	74.6
Manufacturing industries - oil	6.26	378.5%	6.1	80.7
Other energy industry own use - oil	1.25	87.1%	1.2	81.9
Residential - oil	0.54	236.3%	0.5	82.4
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>84.74</i>	<i>195.1%</i>	<i>82.4</i>	<i>82.4</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Kyrgyzstan

Figure 1. CO₂ emissions by fuel

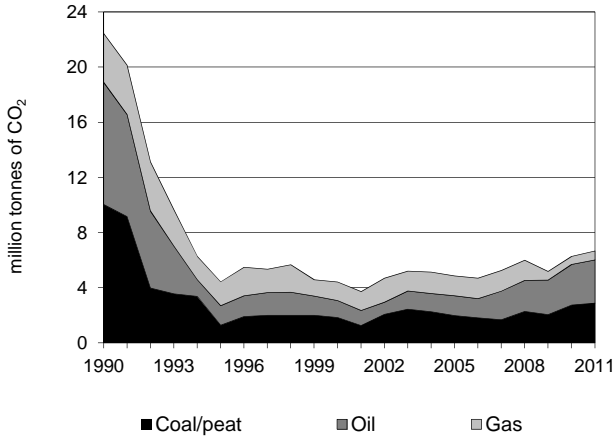


Figure 2. CO₂ emissions by sector

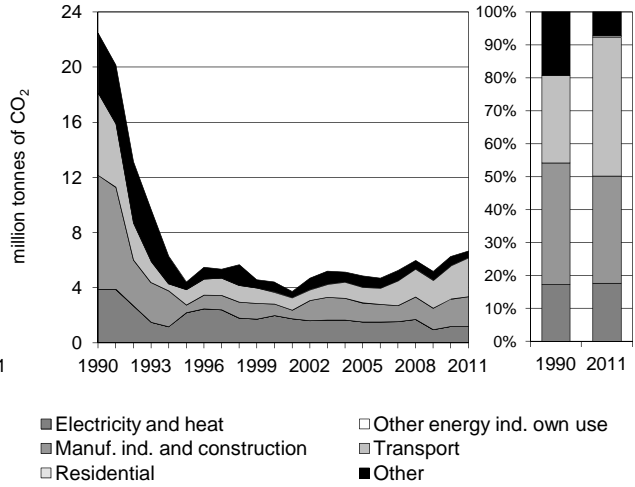


Figure 3. Reference vs Sectoral Approach

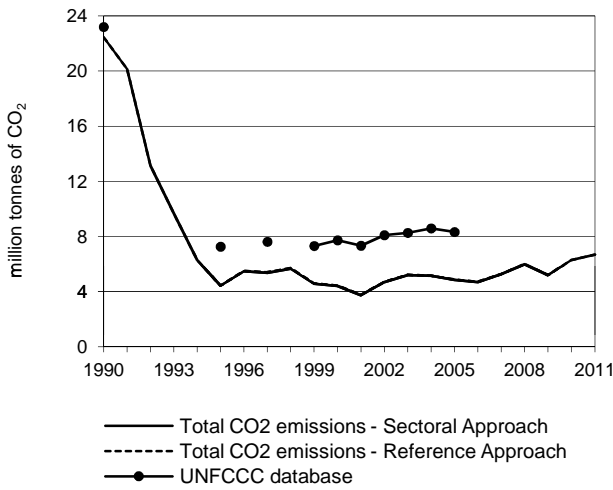


Figure 4. Electricity generation by fuel

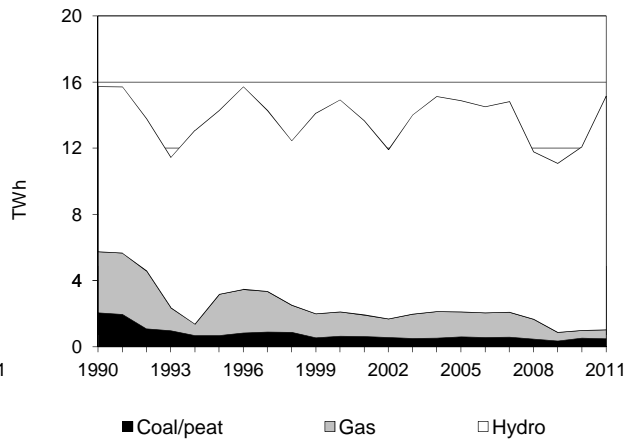


Figure 5. Changes in selected indicators *

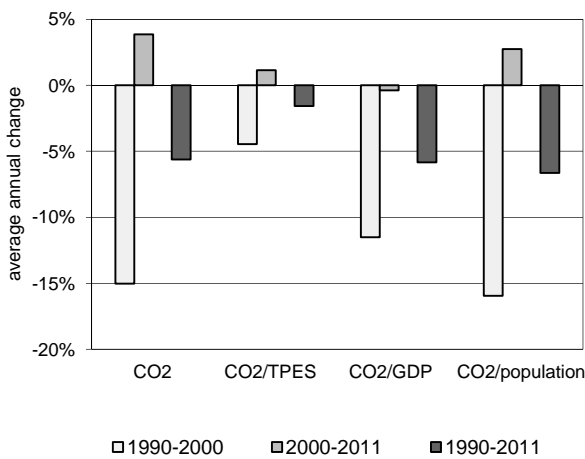
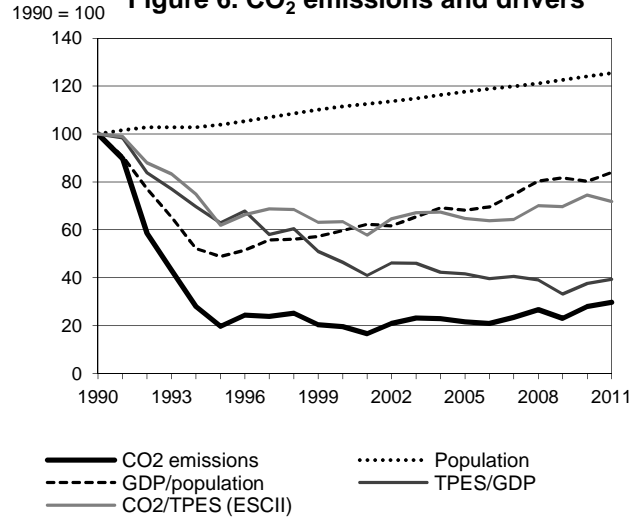


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Kyrgyzstan

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	22.45	4.43	4.40	4.85	5.19	6.27	6.67	-70.3%
TPES (PJ)	313	100	97	105	104	117	130	-58.6%
GDP (billion 2005 USD)	3.07	1.56	2.04	2.46	3.07	3.06	3.23	5.3%
GDP PPP (billion 2005 USD)	11.08	5.62	7.38	8.89	11.09	11.04	11.67	5.3%
Population (millions)	4.39	4.56	4.90	5.16	5.38	5.45	5.51	25.4%
CO ₂ / TPES (tCO ₂ per TJ)	71.6	44.3	45.4	46.4	49.9	53.4	51.4	-28.2%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	7.32	2.85	2.16	1.97	1.69	2.05	2.07	-71.8%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	2.03	0.79	0.60	0.55	0.47	0.57	0.57	-71.8%
CO ₂ / population (tCO ₂ per capita)	5.11	0.97	0.90	0.94	0.96	1.15	1.21	-76.3%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	20	20	22	23	28	30	-70.3%
Population	100	104	112	118	123	124	125	25.4%
GDP per population (GDP per capita)	100	49	60	68	82	80	84	-16.0%
Energy intensity (TPES/GDP)	100	63	46	42	33	38	39	-60.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	62	63	65	70	75	72	-28.2%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	2.87	3.15	0.65	-	6.67	-70.3%
Main activity producer elec. and heat	0.73	-	0.45	-	1.18	-69.6%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	2.15	0.02	-	-	2.17	-73.8%
Transport	-	2.79	0.02	-	2.80	-53.0%
<i>of which: road</i>	-	2.79	0.02	-	2.80	-53.0%
Other	-	0.34	0.18	-	0.52	-88.1%
<i>of which: residential</i>	-	0.03	-	-	0.03	x
Reference Approach	2.87	3.16	0.65	-	6.68	-70.3%
Diff. due to losses and/or transformation	-	0.01	-	-	0.01	-
Statistical differences	-	-	-	-	-	-
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	0.82	-	-	0.82	212.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	2.79	-53.2%	21.4	21.4
Manufacturing industries - coal/peat	2.15	-74.1%	16.5	37.9
Main activity prod. elec. and heat - coal/peat	0.73	-58.4%	5.6	43.5
Main activity prod. elec. and heat - gas	0.45	-78.8%	3.5	47.0
Non-specified other - oil	0.30	-89.6%	2.3	49.3
Non-specified other - gas	0.18	-87.2%	1.4	50.7
Residential - oil	0.03	x	0.2	51.0
Manufacturing industries - oil	0.02	x	0.2	51.2
Road - gas	0.02	x	0.1	51.3
<i>Memo: total CO₂ from fuel combustion</i>	<i>6.67</i>	<i>-70.3%</i>	<i>51.3</i>	<i>51.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Latvia

Figure 1. CO₂ emissions by fuel

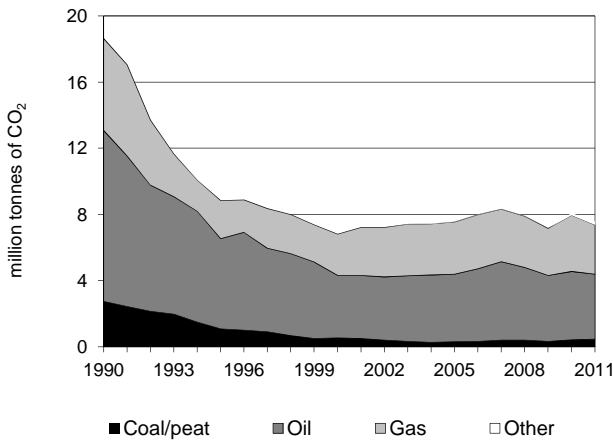


Figure 2. CO₂ emissions by sector

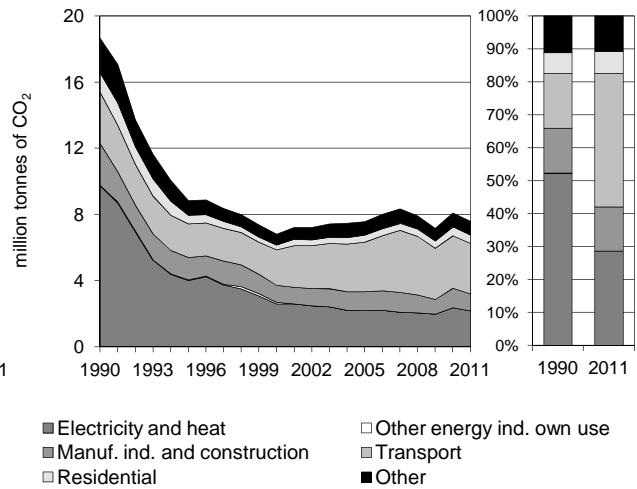


Figure 3. Reference vs Sectoral Approach

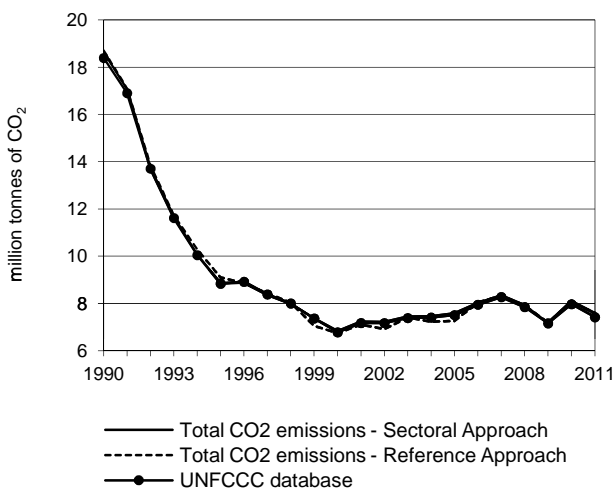


Figure 4. Electricity generation by fuel

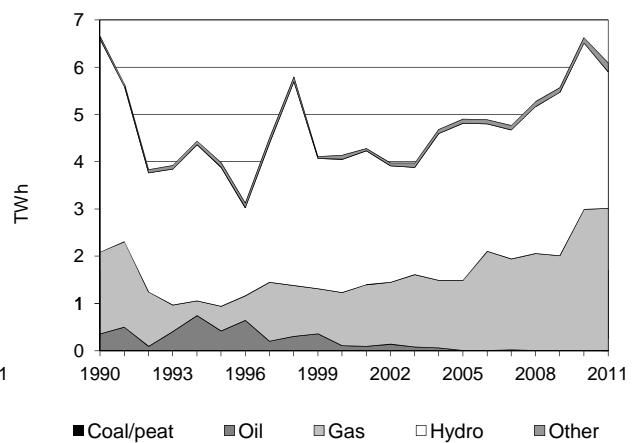


Figure 5. Changes in selected indicators *

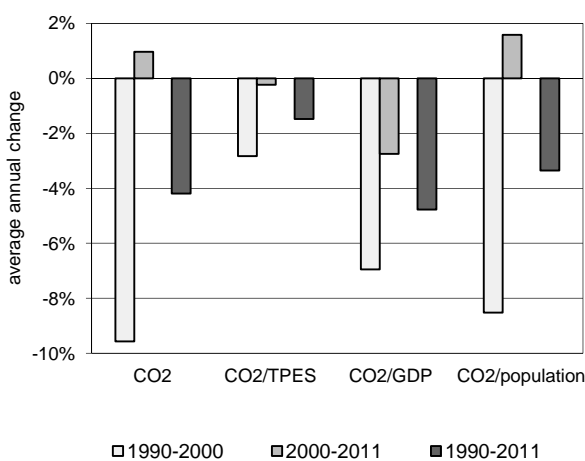
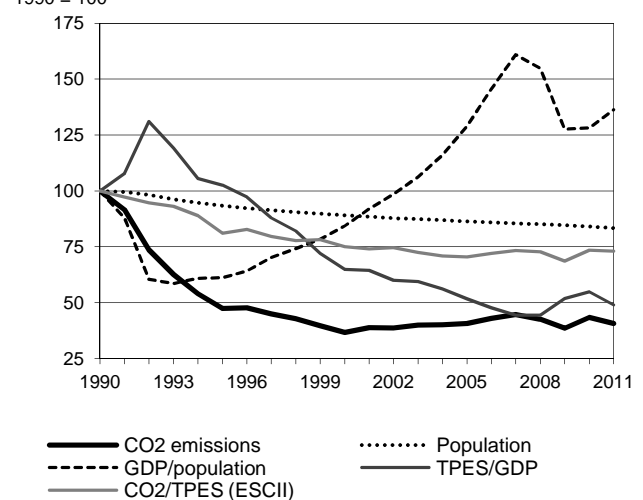


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Latvia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	18.64	8.85	6.82	7.57	7.17	8.09	7.58	-59.3%
TPES (PJ)	329	192	160	190	184	194	183	-44.3%
GDP (billion 2005 USD)	14.40	8.22	10.82	16.04	15.56	15.50	16.35	13.6%
GDP PPP (billion 2005 USD)	26.92	15.36	20.24	30.00	29.09	28.99	30.58	13.6%
Population (millions)	2.66	2.49	2.37	2.30	2.26	2.24	2.22	-16.6%
CO ₂ / TPES (tCO ₂ per TJ)	56.7	46.0	42.5	40.0	38.9	41.6	41.4	-26.9%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.29	1.08	0.63	0.47	0.46	0.52	0.46	-64.2%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.69	0.58	0.34	0.25	0.25	0.28	0.25	-64.2%
CO ₂ / population (tCO ₂ per capita)	7.00	3.56	2.87	3.29	3.18	3.61	3.41	-51.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	47	37	41	38	43	41	-59.3%
Population	100	93	89	86	85	84	83	-16.6%
GDP per population (GDP per capita)	100	61	84	129	128	128	136	36.2%
Energy intensity (TPES/GDP)	100	103	65	52	52	55	49	-51.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	81	75	70	69	73	73	-26.9%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.47	3.93	2.98	0.20	7.58	-59.3%
Main activity producer elec. and heat	0.04	0.06	1.98	-	2.09	-65.8%
Unallocated autoproducers	0.01	-	0.07	-	0.08	-97.8%
Other energy industry own use	-	-	-	-	-	-100.0%
Manufacturing industries and construction	0.22	0.20	0.41	0.20	1.02	-59.9%
Transport	-	3.07	-	-	3.07	-0.7%
<i>of which: road</i>	-	2.79	-	-	2.79	20.0%
Other	0.20	0.60	0.52	-	1.33	-59.3%
<i>of which: residential</i>	0.10	0.15	0.25	-	0.51	-57.4%
Reference Approach	0.47	3.92	3.01	0.20	7.59	-59.4%
Diff. due to losses and/or transformation	-	-0.00	0.03	-	0.03	
Statistical differences	0.00	-0.01	-0.00	-	-0.01	
<i>Memo: international marine bunkers</i>	-	0.67	-	-	0.67	-54.6%
<i>Memo: international aviation bunkers</i>	-	0.35	-	-	0.35	60.6%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	2.79	20.9%	24.0	24.0
Main activity prod. elec. and heat - gas	1.98	-27.5%	17.0	41.0
Non-specified other - oil	0.45	-66.0%	3.8	44.8
Manufacturing industries - gas	0.41	-60.5%	3.5	48.3
Other transport - oil	0.27	-60.9%	2.4	50.6
Non-specified other - gas	0.27	-10.2%	2.3	53.0
Residential - gas	0.25	11.7%	2.1	55.1
Manufacturing industries - coal/peat	0.22	65.4%	1.8	57.0
Manufacturing industries - oil	0.20	-85.4%	1.7	58.7
<i>Memo: total CO₂ from fuel combustion</i>	<i>7.58</i>	<i>-59.3%</i>	<i>65.0</i>	<i>65.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Lebanon

Figure 1. CO₂ emissions by fuel

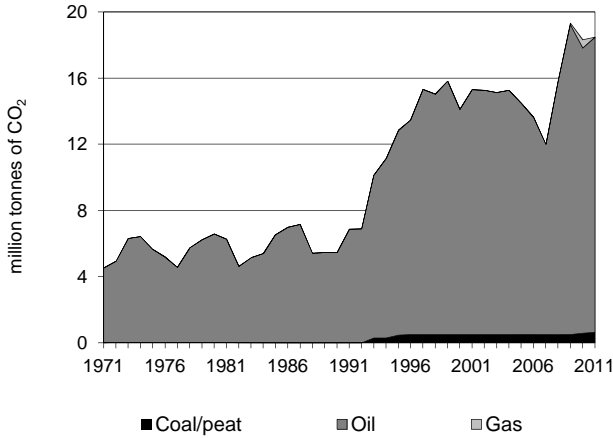


Figure 2. CO₂ emissions by sector

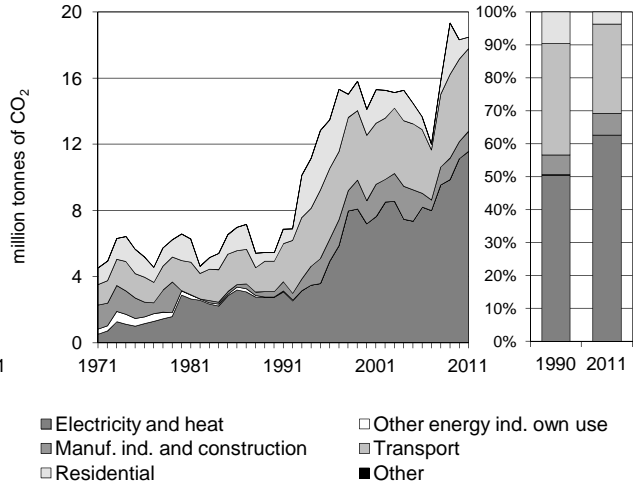


Figure 3. Reference vs Sectoral Approach

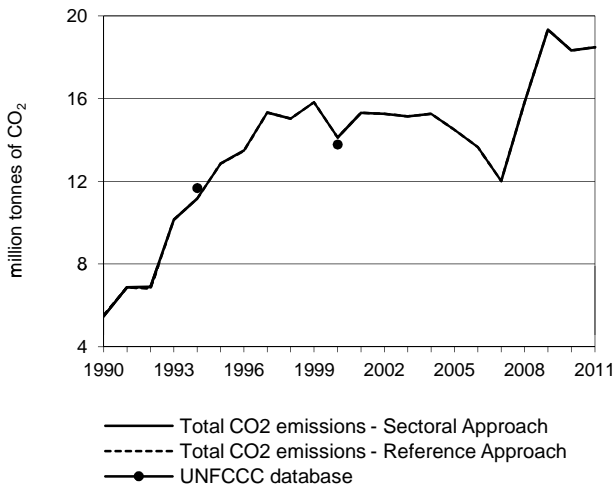


Figure 4. Electricity generation by fuel

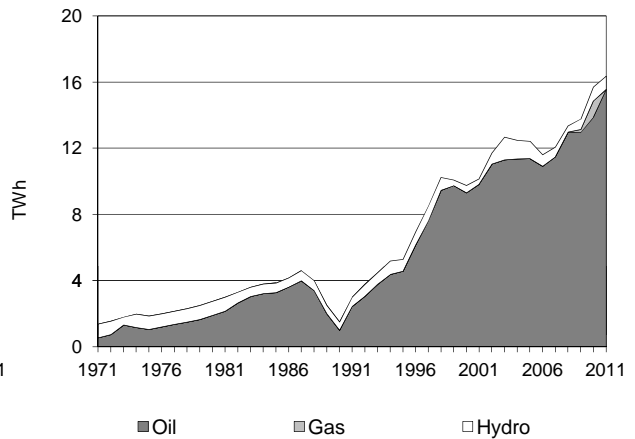


Figure 5. Changes in selected indicators *

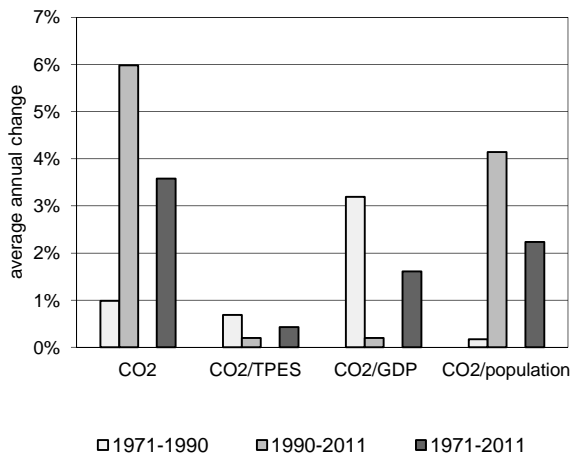
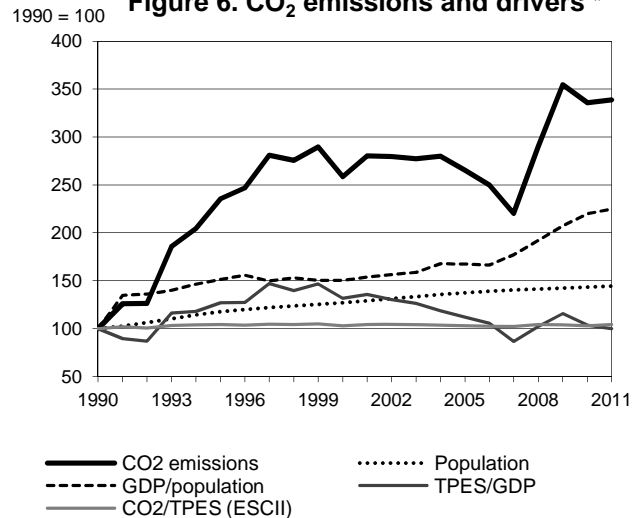


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Lebanon

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	5.46	12.85	14.12	14.48	19.34	18.32	18.49	238.7%
TPES (PJ)	82	185	205	210	279	267	266	225.0%
GDP (billion 2005 USD)	9.51	16.91	18.15	21.86	28.03	29.99	30.89	224.9%
GDP PPP (billion 2005 USD)	16.91	30.07	32.29	38.88	49.86	53.35	54.95	224.9%
Population (millions)	2.95	3.46	3.74	4.05	4.20	4.23	4.26	44.5%
CO ₂ / TPES (tCO ₂ per TJ)	66.7	69.6	68.7	68.9	69.4	68.6	69.5	4.2%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.57	0.76	0.78	0.66	0.69	0.61	0.60	4.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.32	0.43	0.44	0.37	0.39	0.34	0.34	4.2%
CO ₂ / population (tCO ₂ per capita)	1.85	3.71	3.77	3.57	4.61	4.33	4.34	134.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	235	259	265	354	336	339	238.7%
Population	100	117	127	137	142	143	144	44.5%
GDP per population (GDP per capita)	100	151	150	167	207	220	225	124.9%
Energy intensity (TPES/GDP)	100	127	132	112	115	104	100	0.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	104	103	103	104	103	104	4.2%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.64	17.84	-	-	18.49	238.7%
Main activity producer elec. and heat	-	7.98	-	-	7.98	190.1%
Unallocated autoproducers	-	3.58	-	-	3.58	x
Other energy industry own use	-	-	-	-	-	-100.0%
Manufacturing industries and construction	0.64	0.58	-	-	1.22	277.8%
Transport	-	5.01	-	-	5.01	171.5%
<i>of which: road</i>	-	5.01	-	-	5.01	171.5%
Other	-	0.69	-	-	0.69	31.8%
<i>of which: residential</i>	-	0.69	-	-	0.69	31.8%
Reference Approach	0.64	17.84	-	-	18.49	235.6%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	-0.00	-	-	-0.00	-
<i>Memo: international marine bunkers</i>	-	0.08	-	-	0.08	..
<i>Memo: international aviation bunkers</i>	-	0.71	-	-	0.71	348.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - oil	7.98	190.1%	35.6	35.6
Road - oil	5.01	171.5%	22.3	57.9
Unallocated autoproducers - oil	3.58	x	16.0	73.9
Residential - oil	0.69	31.8%	3.1	77.0
Manufacturing industries - coal/peat	0.64	x	2.9	79.8
Manufacturing industries - oil	0.58	79.4%	2.6	82.4
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>18.49</i>	<i>238.7%</i>	<i>82.4</i>	<i>82.4</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Libya

Figure 1. CO₂ emissions by fuel

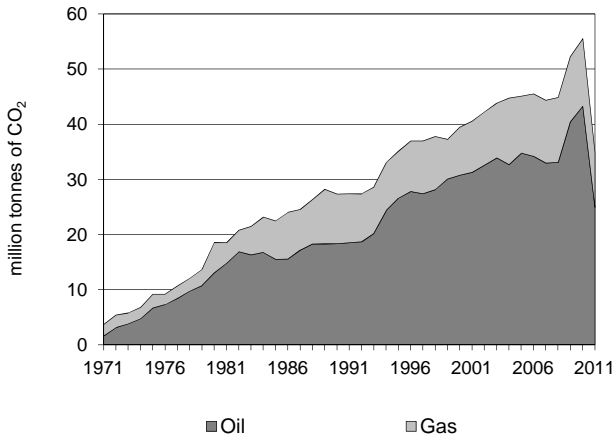


Figure 2. CO₂ emissions by sector

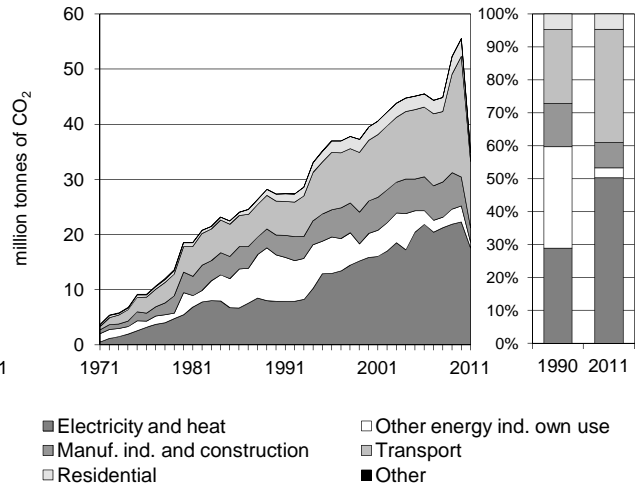


Figure 3. Reference vs Sectoral Approach

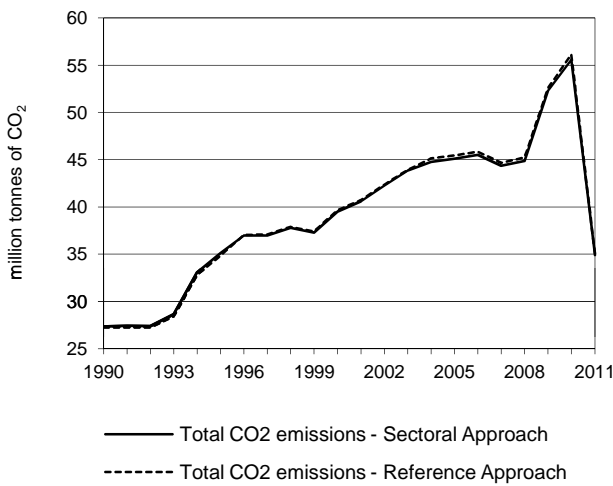


Figure 4. Electricity generation by fuel

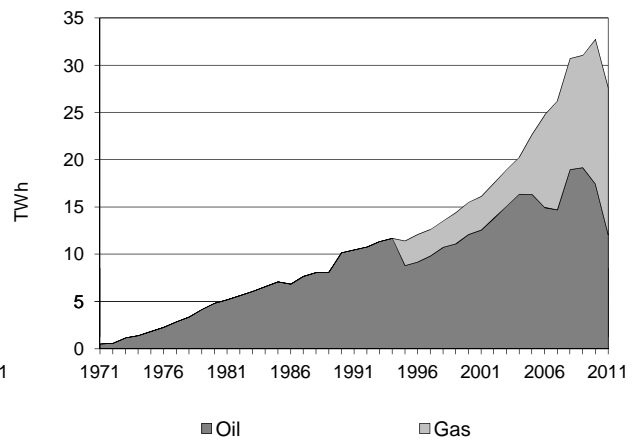


Figure 5. Changes in selected indicators *

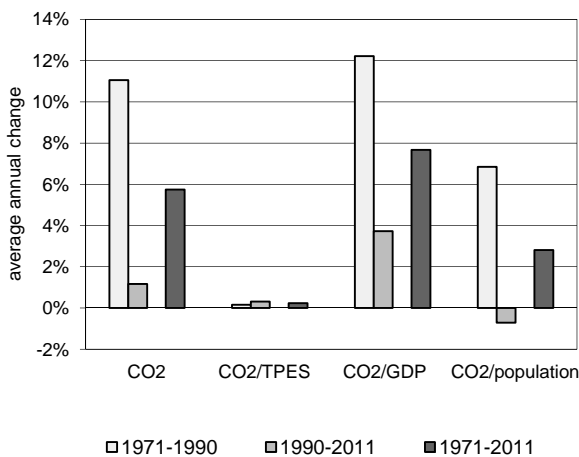
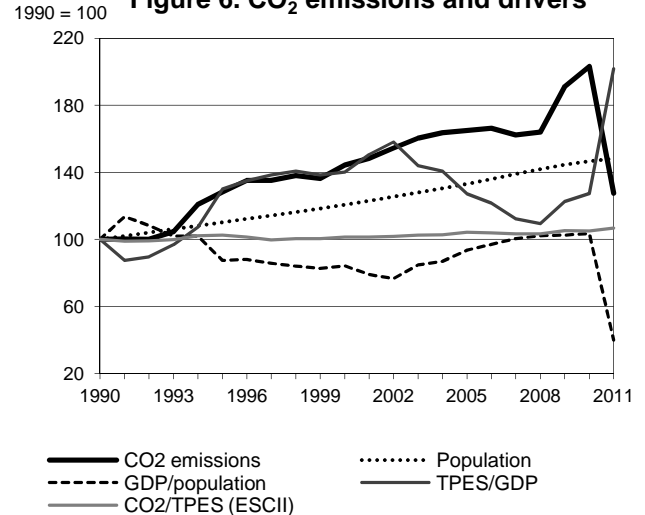


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Libya

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	27.35	35.12	39.50	45.12	52.27	55.55	34.89	27.6%
TPES (PJ)	468	586	666	740	849	905	559	19.5%
GDP (billion 2005 USD)	35.35	34.04	35.93	44.00	52.35	53.67	20.92	-40.8%
GDP PPP (billion 2005 USD)	64.96	62.55	66.03	80.87	96.20	98.64	38.44	-40.8%
Population (millions)	4.33	4.78	5.23	5.77	6.26	6.36	6.42	48.2%
CO ₂ / TPES (tCO ₂ per TJ)	58.5	60.0	59.3	61.0	61.5	61.4	62.5	6.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.77	1.03	1.10	1.03	1.00	1.04	1.67	115.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.42	0.56	0.60	0.56	0.54	0.56	0.91	115.6%
CO ₂ / population (tCO ₂ per capita)	6.31	7.35	7.55	7.82	8.35	8.74	5.43	-13.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	128	144	165	191	203	128	27.6%
Population	100	110	121	133	145	147	148	48.2%
GDP per population (GDP per capita)	100	87	84	93	102	104	40	-60.1%
Energy intensity (TPES/GDP)	100	130	140	127	123	127	202	101.9%
Carbon intensity: ESCII (CO ₂ /TPES)	100	103	101	104	105	105	107	6.8%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	24.94	9.95	-	34.89	27.6%
Main activity producer elec. and heat	-	9.33	8.22	-	17.55	121.6%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	0.56	0.51	-	1.06	-87.4%
Manufacturing industries and construction	-	1.43	1.23	-	2.65	-26.3%
Transport	-	12.01	-	-	12.01	96.1%
<i>of which: road</i>	-	12.00	-	-	12.00	96.2%
Other	-	1.62	-	-	1.62	24.6%
<i>of which: residential</i>	-	1.62	-	-	1.62	24.6%
Reference Approach	-	25.06	9.95	-	35.02	28.5%
Diff. due to losses and/or transformation	-	0.12	-	-	0.12	-
Statistical differences	-	0.00	0.00	-	0.00	-
<i>Memo: international marine bunkers</i>	-	0.35	-	-	0.35	42.5%
<i>Memo: international aviation bunkers</i>	-	0.28	-	-	0.28	-55.5%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	12.00	96.2%	20.1	20.1
Main activity prod. elec. and heat - oil	9.33	17.8%	15.6	35.8
Main activity prod. elec. and heat - gas	8.22	x	13.8	49.5
Residential - oil	1.62	24.6%	2.7	52.2
Manufacturing industries - oil	1.43	35.7%	2.4	54.6
Manufacturing industries - gas	1.23	-51.9%	2.1	56.7
Other energy industry own use - oil	0.56	-71.6%	0.9	57.6
Other energy industry own use - gas	0.51	-92.2%	0.8	58.5
Other transport - oil	0.01	-0.0%	0.0	58.5
<i>Memo: total CO₂ from fuel combustion</i>	34.89	27.6%	58.5	58.5

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Lithuania

Figure 1. CO₂ emissions by fuel

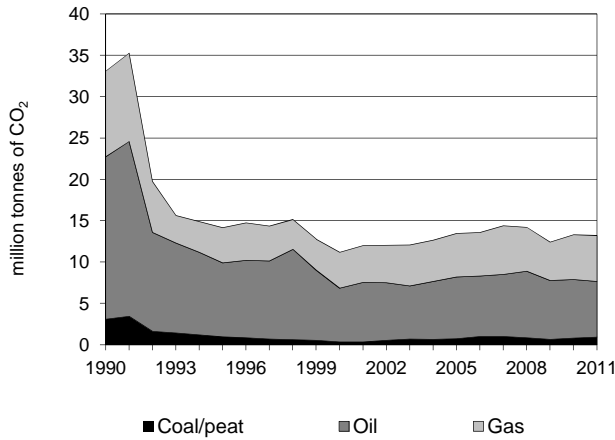


Figure 2. CO₂ emissions by sector

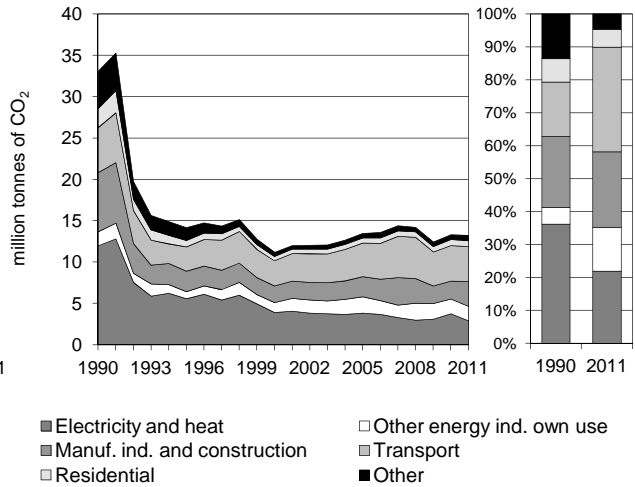


Figure 3. Reference vs Sectoral Approach

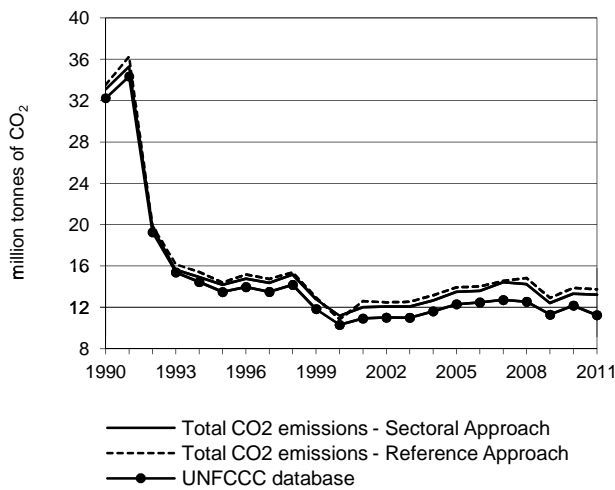


Figure 4. Electricity generation by fuel

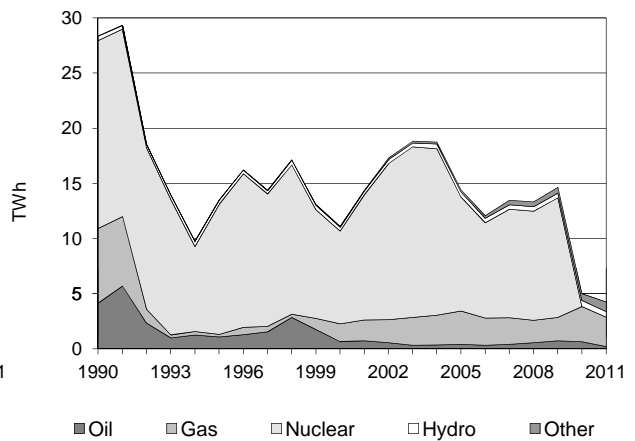


Figure 5. Changes in selected indicators *

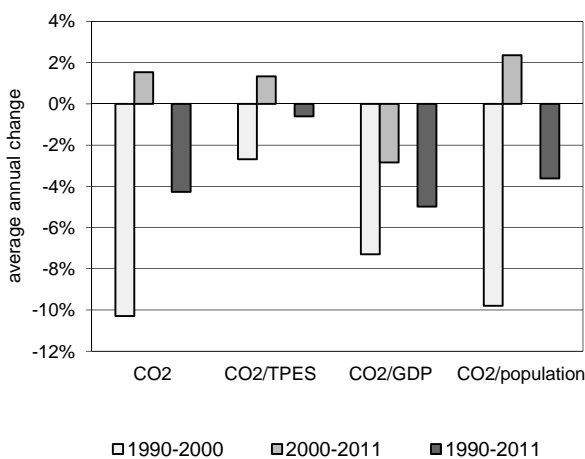
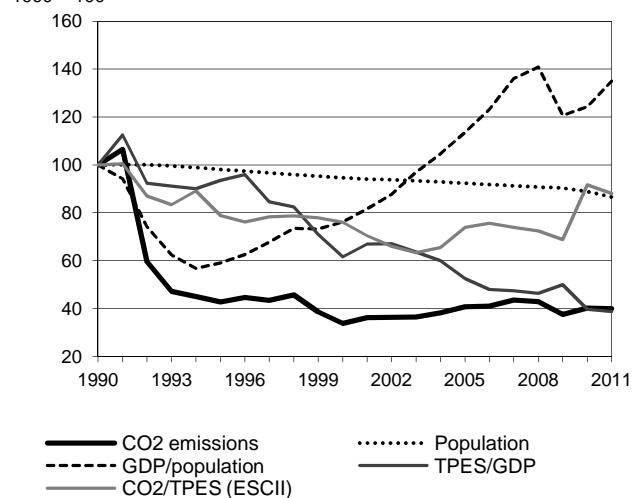


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Lithuania

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	33.11	14.17	11.19	13.48	12.43	13.32	13.22	-60.1%
TPES (PJ)	673	365	299	370	367	295	305	-54.6%
GDP (billion 2005 USD)	24.76	14.36	17.84	25.96	26.99	27.35	28.95	16.9%
GDP PPP (billion 2005 USD)	46.22	26.80	33.31	48.47	50.39	51.06	54.06	16.9%
Population (millions)	3.70	3.63	3.50	3.41	3.34	3.29	3.20	-13.4%
CO ₂ / TPES (tCO ₂ per TJ)	49.2	38.9	37.5	36.4	33.9	45.1	43.3	-12.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.34	0.99	0.63	0.52	0.46	0.49	0.46	-65.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.72	0.53	0.34	0.28	0.25	0.26	0.24	-65.9%
CO ₂ / population (tCO ₂ per capita)	8.95	3.91	3.20	3.95	3.72	4.05	4.13	-53.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	43	34	41	38	40	40	-60.1%
Population	100	98	95	92	90	89	87	-13.4%
GDP per population (GDP per capita)	100	59	76	114	121	124	135	35.0%
Energy intensity (TPES/GDP)	100	94	62	53	50	40	39	-61.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	79	76	74	69	92	88	-12.0%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.95	6.72	5.55	-	13.22	-60.1%
Main activity producer elec. and heat	0.02	0.11	2.59	-	2.73	-75.1%
Unallocated autoproducers	0.00	0.09	0.08	-	0.17	-82.9%
Other energy industry own use	0.00	1.74	0.01	-	1.75	4.2%
Manufacturing industries and construction	0.42	0.35	2.26	-	3.03	-57.6%
Transport	-	4.16	0.05	-	4.21	-23.1%
<i>of which: road</i>	-	3.91	0.01	-	3.91	-23.0%
Other	0.50	0.28	0.55	-	1.33	-80.5%
<i>of which: residential</i>	0.26	0.11	0.34	-	0.71	-69.2%
Reference Approach	0.95	7.25	5.55	-	13.75	-59.0%
Diff. due to losses and/or transformation	0.00	0.53	0.00	-	0.53	
Statistical differences	0.00	-0.00	0.00	-	0.00	
<i>Memo: international marine bunkers</i>	-	0.45	-	-	0.45	50.9%
<i>Memo: international aviation bunkers</i>	-	0.16	-	-	0.16	-58.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	3.91	-23.2%	16.6	16.6
Main activity prod. elec. and heat - gas	2.59	-52.1%	11.0	27.6
Manufacturing industries - gas	2.26	-26.4%	9.6	37.2
Other energy industry own use - oil	1.74	3.5%	7.4	44.5
Manufacturing industries - coal/peat	0.42	127.4%	1.8	46.3
Manufacturing industries - oil	0.35	-91.0%	1.5	47.8
Residential - gas	0.34	-34.4%	1.4	49.2
Residential - coal/peat	0.26	-81.4%	1.1	50.3
Other transport - oil	0.25	-34.6%	1.1	51.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>13.22</i>	<i>-60.1%</i>	<i>56.1</i>	<i>56.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Luxembourg

Figure 1. CO₂ emissions by fuel

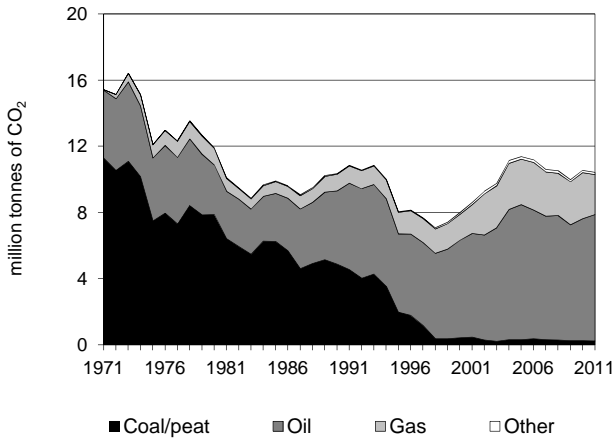


Figure 2. CO₂ emissions by sector

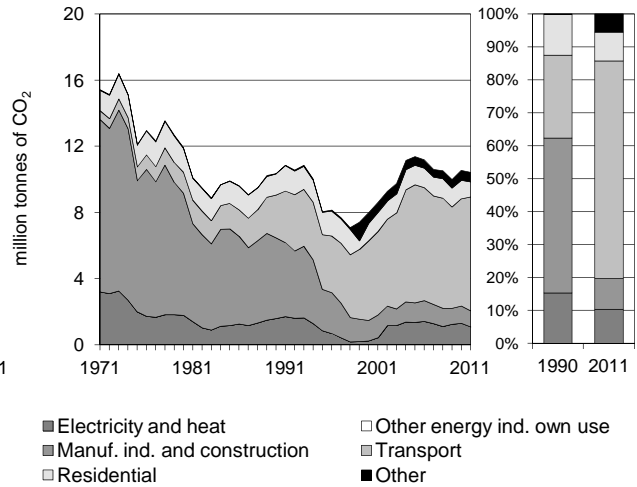


Figure 3. Reference vs Sectoral Approach

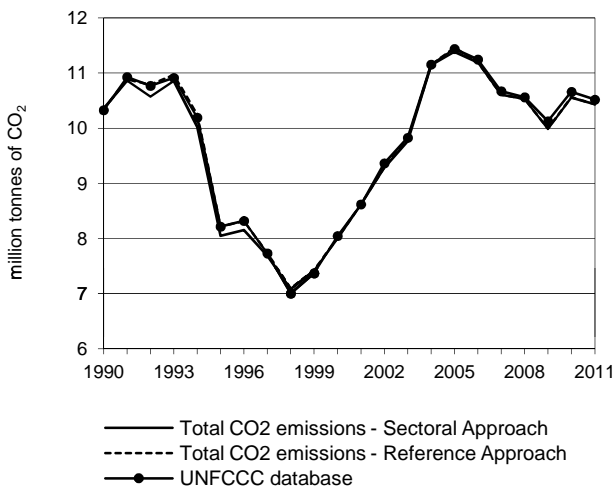


Figure 4. Electricity generation by fuel

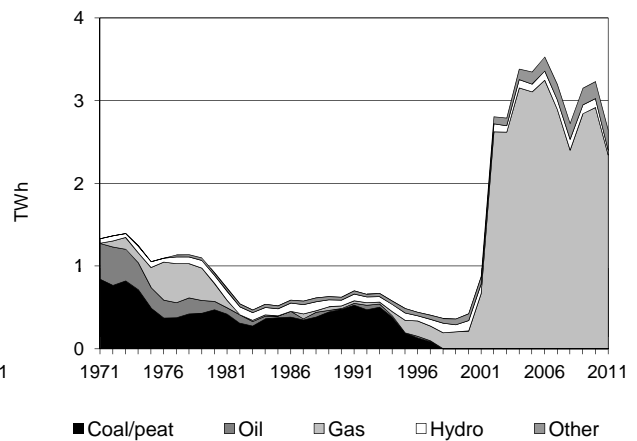


Figure 5. Changes in selected indicators *

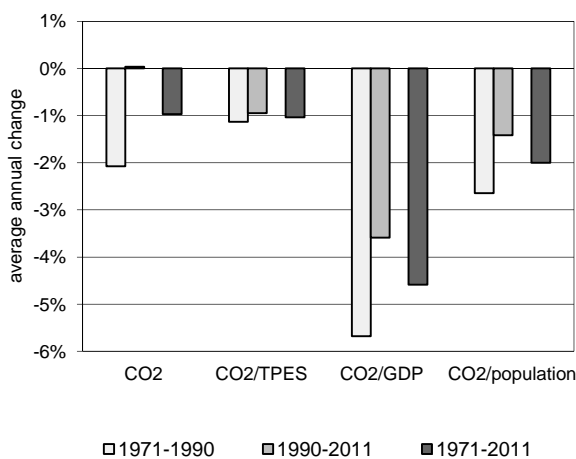
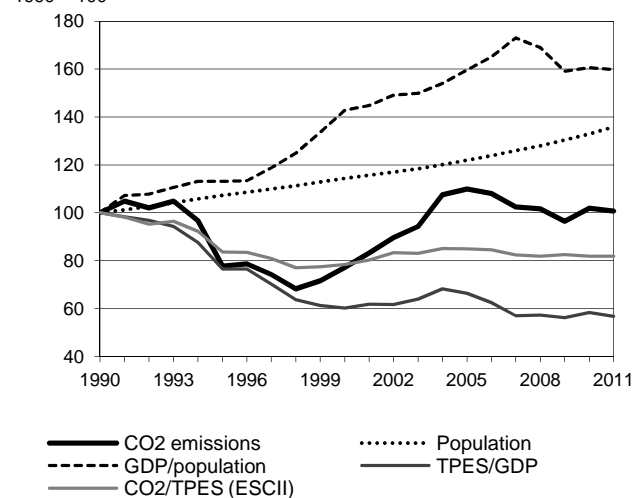


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Luxembourg

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	10.36	8.05	8.00	11.38	9.99	10.56	10.43	0.7%
TPES (PJ)	142	132	140	183	166	177	175	23.1%
GDP (billion 2005 USD)	19.33	23.46	31.59	37.64	40.09	41.26	41.94	117.0%
GDP PPP (billion 2005 USD)	16.31	19.80	26.65	31.77	33.83	34.82	35.39	117.0%
Population (millions)	0.38	0.41	0.44	0.47	0.50	0.51	0.52	35.9%
CO ₂ / TPES (tCO ₂ per TJ)	73.0	61.1	57.3	62.1	60.3	59.7	59.7	-18.2%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.54	0.34	0.25	0.30	0.25	0.26	0.25	-53.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.64	0.41	0.30	0.36	0.30	0.30	0.29	-53.6%
CO ₂ / population (tCO ₂ per capita)	27.12	19.63	18.31	24.43	20.05	20.78	20.10	-25.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	78	77	110	96	102	101	0.7%
Population	100	107	114	122	130	133	136	35.9%
GDP per population (GDP per capita)	100	113	143	160	159	161	160	59.7%
Energy intensity (TPES/GDP)	100	77	60	66	56	58	57	-43.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	84	78	85	83	82	82	-18.2%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.23	7.65	2.41	0.14	10.43	0.7%
Main activity producer elec. and heat	-	0.00	0.72	0.08	0.81	+
Unallocated autoproducers	-	-	0.27	-	0.27	-82.3%
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	0.23	0.04	0.64	0.06	0.97	-80.0%
Transport	-	6.89	-	-	6.89	164.8%
<i>of which: road</i>	-	6.87	-	-	6.87	164.9%
Other	0.00	0.71	0.78	-	1.48	14.7%
<i>of which: residential</i>	0.00	0.46	0.44	-	0.90	-29.3%
Reference Approach	0.23	7.65	2.41	0.14	10.43	0.8%
Diff. due to losses and/or transformation	-	-	-0.00	-	-0.00	
Statistical differences	-	0.00	-	-	0.00	
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	1.20	-	-	1.20	208.6%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	6.87	164.9%	57.2	57.2
Main activity prod. elec. and heat - gas	0.72	x	6.0	63.3
Manufacturing industries - gas	0.64	-2.0%	5.3	68.6
Residential - oil	0.46	-50.1%	3.8	72.4
Residential - gas	0.44	33.8%	3.7	76.1
Non-specified other - gas	0.34	x	2.8	78.9
Unallocated autoproducers - gas	0.27	+	2.3	81.2
Non-specified other - oil	0.25	+	2.0	83.2
Manufacturing industries - coal/peat	0.23	-93.2%	1.9	85.1
<i>Memo: total CO₂ from fuel combustion</i>	<i>10.43</i>	<i>0.7%</i>	<i>86.8</i>	<i>86.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Former Yugoslav Republic of Macedonia

Figure 1. CO₂ emissions by fuel

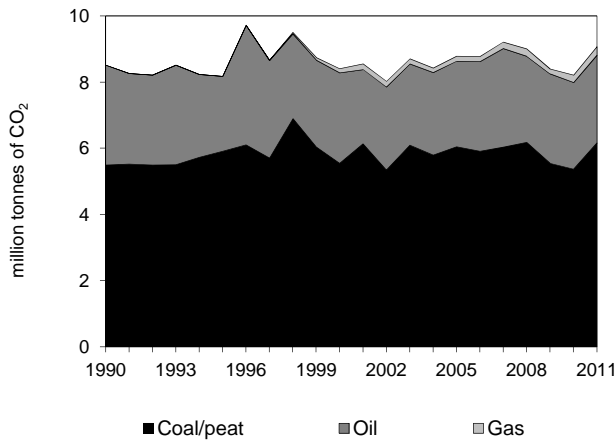


Figure 2. CO₂ emissions by sector

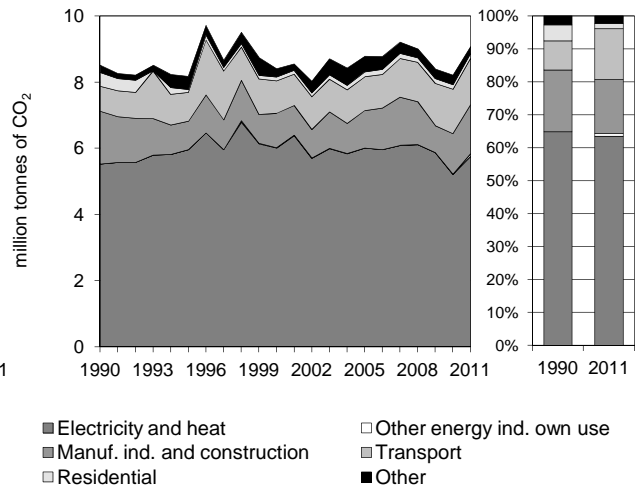


Figure 3. Reference vs Sectoral Approach

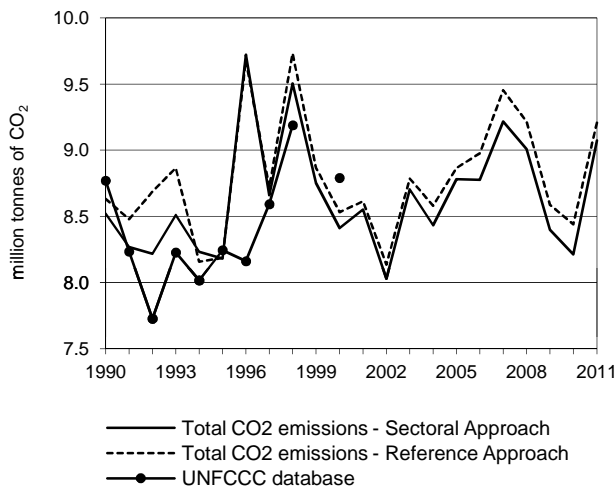


Figure 4. Electricity generation by fuel

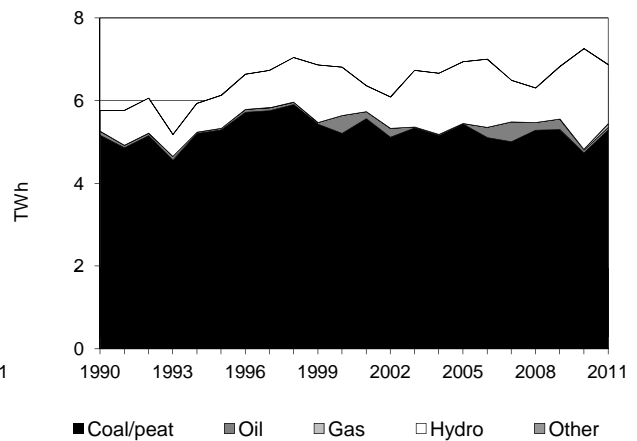


Figure 5. Changes in selected indicators *

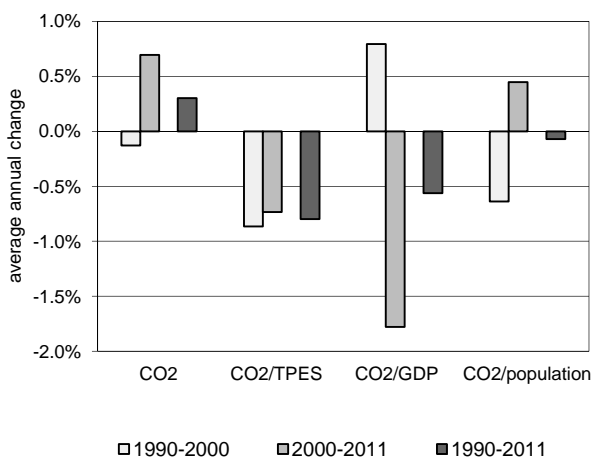
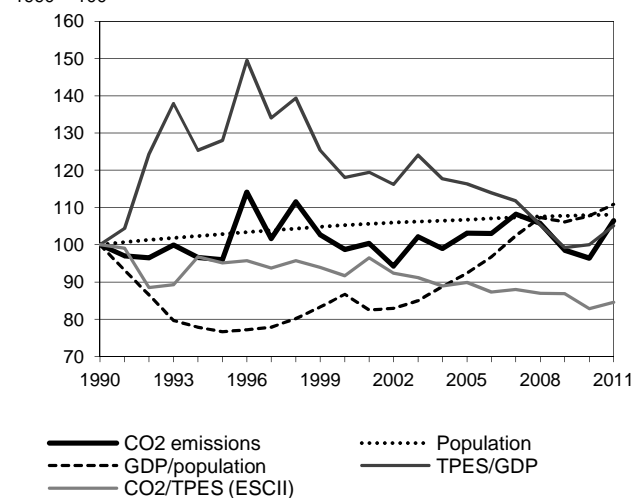


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Former Yugoslav Republic of Macedonia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	8.52	8.18	8.41	8.78	8.40	8.21	9.07	6.5%
TPES (PJ)	104	105	112	119	118	121	131	26.0%
GDP (billion 2005 USD)	6.07	4.78	5.54	5.99	6.94	7.06	7.28	19.9%
GDP PPP (billion 2005 USD)	16.27	12.82	14.84	16.05	18.60	18.93	19.51	19.9%
Population (millions)	1.91	1.96	2.01	2.04	2.06	2.06	2.06	8.1%
CO ₂ / TPES (tCO ₂ per TJ)	82.1	78.2	75.3	73.8	71.4	68.0	69.4	-15.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.40	1.71	1.52	1.47	1.21	1.16	1.25	-11.2%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.52	0.64	0.57	0.55	0.45	0.43	0.47	-11.2%
CO ₂ / population (tCO ₂ per capita)	4.46	4.17	4.19	4.31	4.08	3.98	4.40	-1.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	96	99	103	99	96	106	6.5%
Population	100	103	105	107	108	108	108	8.1%
GDP per population (GDP per capita)	100	77	87	92	106	108	111	10.9%
Energy intensity (TPES/GDP)	100	128	118	116	99	100	105	5.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	92	90	87	83	85	-15.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	6.17	2.65	0.26	-	9.07	6.5%
Main activity producer elec. and heat	5.47	0.11	0.15	-	5.73	11.6%
Unallocated autoproducers	0.02	0.00	0.00	-	0.02	-93.6%
Other energy industry own use	-	0.08	-	-	0.08	x
Manufacturing industries and construction	0.66	0.73	0.10	-	1.48	-7.3%
Transport	-	1.41	0.00	-	1.41	85.7%
<i>of which: road</i>	-	1.38	0.00	-	1.38	88.0%
Other	0.01	0.33	0.00	-	0.35	-45.6%
<i>of which: residential</i>	0.01	0.13	-	-	0.14	-66.2%
Reference Approach	6.14	2.81	0.26	-	9.21	6.7%
Diff. due to losses and/or transformation	-	0.16	0.00	-	0.16	
Statistical differences	-0.03	0.00	0.00	-	-0.03	
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	0.01	-	-	0.01	-20.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	5.47	10.2%	47.3	47.3
Road - oil	1.38	87.9%	11.9	59.2
Manufacturing industries - oil	0.73	-38.8%	6.3	65.5
Manufacturing industries - coal/peat	0.66	59.4%	5.7	71.2
Non-specified other - oil	0.20	-7.6%	1.7	72.9
Main activity prod. elec. and heat - gas	0.15	x	1.3	74.2
Residential - oil	0.13	-67.0%	1.1	75.4
Main activity prod. elec. and heat - oil	0.11	-35.7%	1.0	76.3
Manufacturing industries - gas	0.10	x	0.8	77.1
<i>Memo: total CO₂ from fuel combustion</i>	<i>9.07</i>	<i>6.5%</i>	<i>78.4</i>	<i>78.4</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Malaysia

Figure 1. CO₂ emissions by fuel

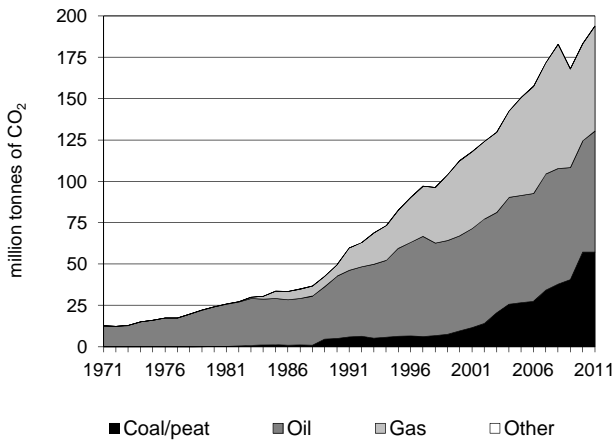


Figure 2. CO₂ emissions by sector

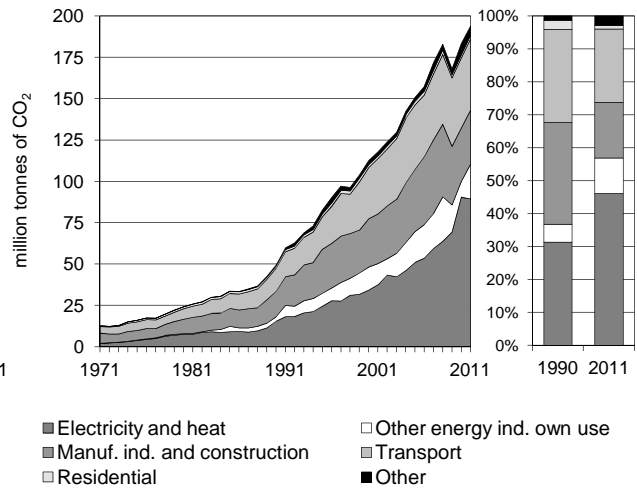


Figure 3. Reference vs Sectoral Approach

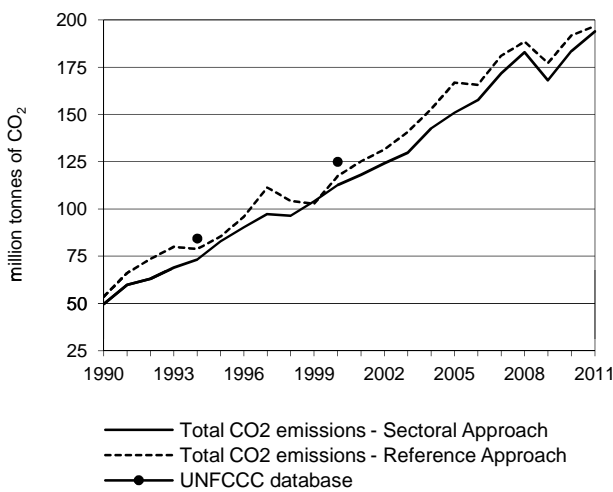


Figure 4. Electricity generation by fuel

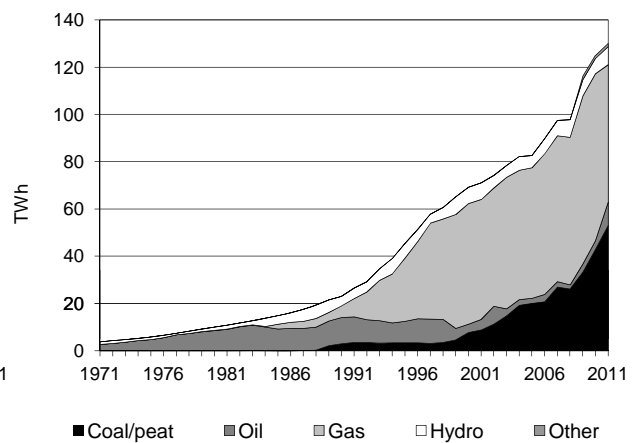


Figure 5. Changes in selected indicators *

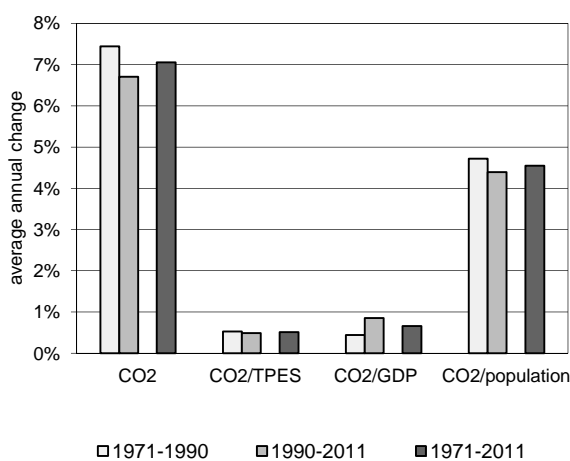
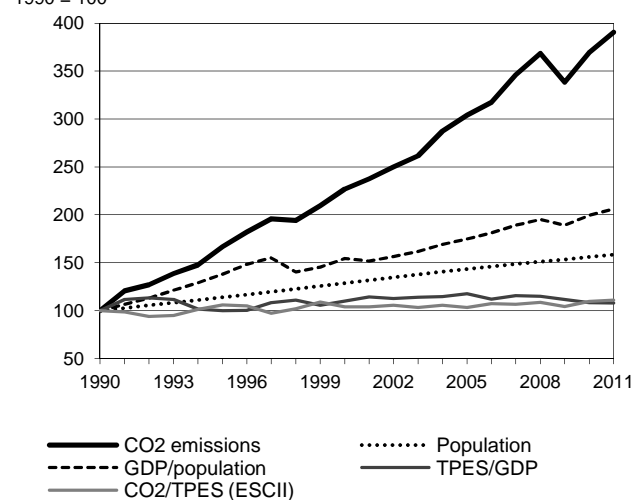


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Malaysia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	49.64	82.78	112.69	150.89	168.06	183.40	193.96	290.7%
TPES (PJ)	902	1 419	1 972	2 659	2 925	3 042	3 178	252.3%
GDP (billion 2005 USD)	57.31	90.11	113.87	143.53	166.32	178.22	187.28	226.8%
GDP PPP (billion 2005 USD)	125.18	196.81	248.70	313.50	363.27	389.26	409.05	226.8%
Population (millions)	18.21	20.72	23.42	26.10	27.95	28.40	28.86	58.5%
CO ₂ / TPES (tCO ₂ per TJ)	55.0	58.4	57.1	56.8	57.5	60.3	61.0	10.9%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.87	0.92	0.99	1.05	1.01	1.03	1.04	19.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.40	0.42	0.45	0.48	0.46	0.47	0.47	19.6%
CO ₂ / population (tCO ₂ per capita)	2.73	3.99	4.81	5.78	6.01	6.46	6.72	146.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	167	227	304	339	369	391	290.7%
Population	100	114	129	143	153	156	158	58.5%
GDP per population (GDP per capita)	100	138	155	175	189	199	206	106.2%
Energy intensity (TPES/GDP)	100	100	110	118	112	108	108	7.8%
Carbon intensity: ESCII (CO ₂ /TPES)	100	106	104	103	104	110	111	10.9%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	57.34	73.13	63.49	0.01	193.96	290.7%
Main activity producer elec. and heat	50.51	6.53	28.47	-	85.52	448.7%
Unallocated autoproducers	-	0.38	3.57	0.01	3.96	x
Other energy industry own use	-	4.80	16.16	-	20.96	678.1%
Manufacturing industries and construction	6.83	11.30	14.63	-	32.75	114.0%
Transport	-	42.45	0.57	-	43.02	206.5%
<i>of which: road</i>	-	41.90	0.57	-	42.48	205.5%
Other	-	7.67	0.08	-	7.75	282.7%
<i>of which: residential</i>	-	2.07	0.01	-	2.09	56.8%
Reference Approach	60.48	72.57	63.82	0.01	196.87	267.6%
Diff. due to losses and/or transformation	-	4.45	3.54	-	7.99	
Statistical differences	3.14	- 5.01	- 3.21	-	- 5.08	
<i>Memo: international marine bunkers</i>	-	0.64	-	-	0.64	120.6%
<i>Memo: international aviation bunkers</i>	-	7.58	-	-	7.58	304.3%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	50.51	+	19.8	19.8
Road - oil	41.90	201.3%	16.4	36.2
Main activity prod. elec. and heat - gas	28.47	895.0%	11.2	47.4
Other energy industry own use - gas	16.16	641.8%	6.3	53.7
Manufacturing industries - gas	14.63	687.1%	5.7	59.4
Manufacturing industries - oil	11.30	-1.4%	4.4	63.9
Manufacturing industries - coal/peat	6.83	242.8%	2.7	66.5
Main activity prod. elec. and heat - oil	6.53	-31.7%	2.6	69.1
Non-specified other - oil	5.59	718.1%	2.2	71.3
<i>Memo: total CO₂ from fuel combustion</i>	<i>193.96</i>	<i>290.7%</i>	<i>76.0</i>	<i>76.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Malta

Figure 1. CO₂ emissions by fuel

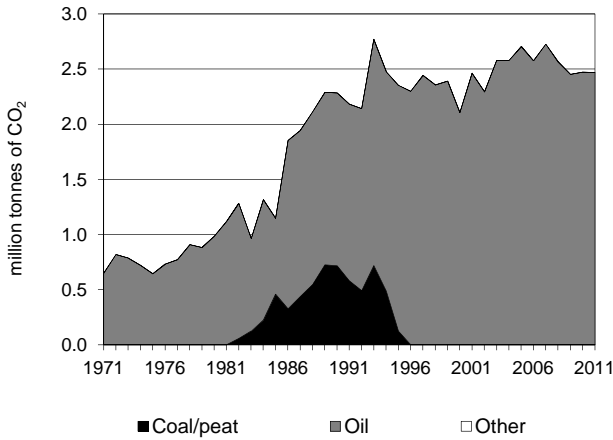


Figure 2. CO₂ emissions by sector

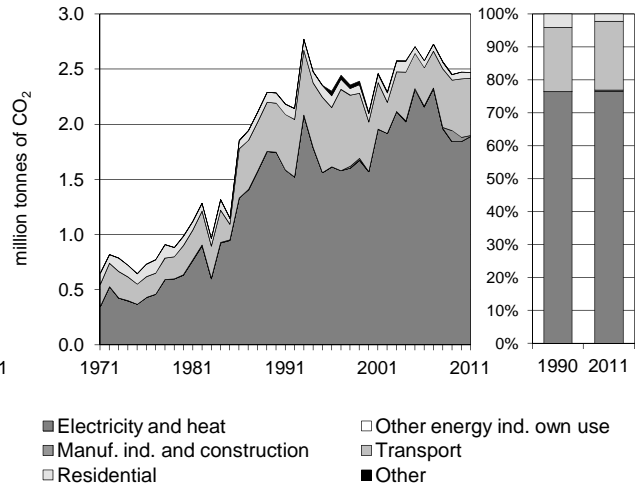


Figure 3. Reference vs Sectoral Approach

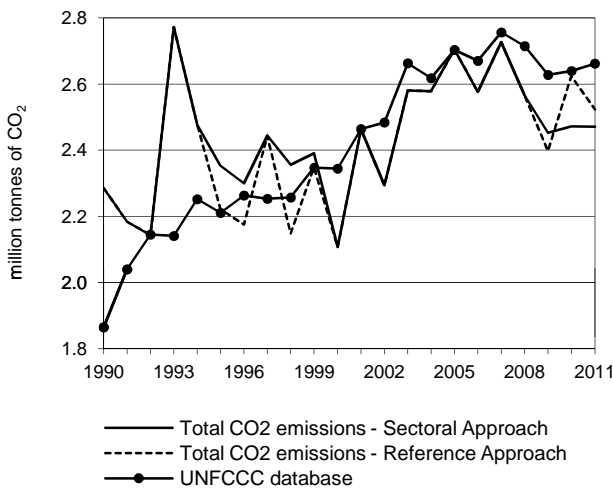


Figure 4. Electricity generation by fuel

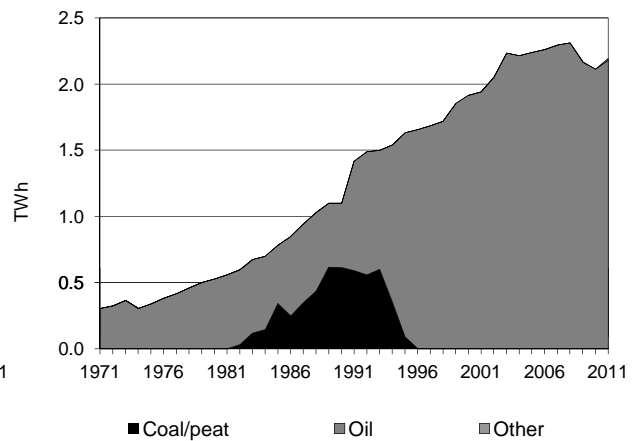


Figure 5. Changes in selected indicators *

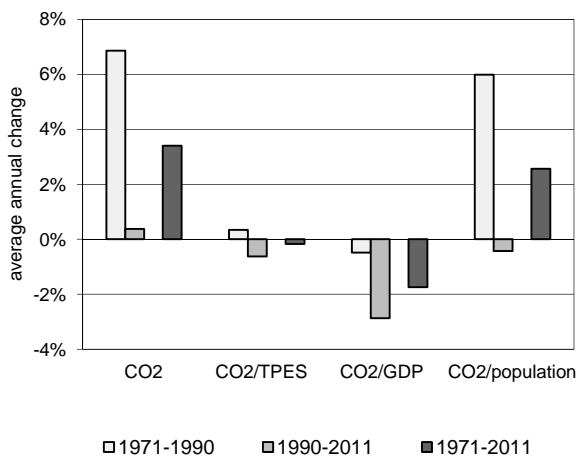
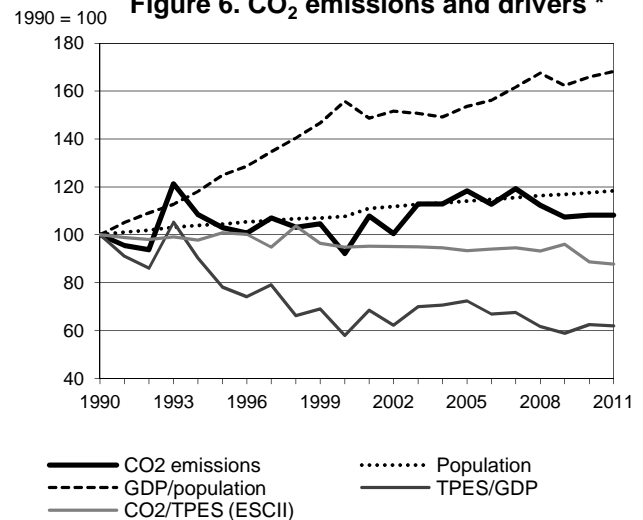


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Malta *
Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2.29	2.35	2.11	2.71	2.45	2.47	2.47	8.2%
TPES (PJ)	29	30	28	37	33	36	36	23.3%
GDP (billion 2005 USD)	3.41	4.46	5.72	5.98	6.48	6.65	6.79	99.1%
GDP PPP (billion 2005 USD)	4.84	6.32	8.12	8.49	9.19	9.44	9.64	99.1%
Population (millions)	0.35	0.37	0.38	0.40	0.41	0.42	0.42	18.4%
CO ₂ / TPES (tCO ₂ per TJ)	78.5	79.2	74.4	73.3	75.4	69.6	68.8	-12.3%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.67	0.53	0.37	0.45	0.38	0.37	0.36	-45.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.47	0.37	0.26	0.32	0.27	0.26	0.26	-45.7%
CO ₂ / population (tCO ₂ per capita)	6.46	6.36	5.53	6.70	5.93	5.94	5.90	-8.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) **								
CO ₂ emissions	100	103	92	118	107	108	108	8.2%
Population	100	105	108	114	117	118	118	18.4%
GDP per population (GDP per capita)	100	125	156	154	162	166	168	68.2%
Energy intensity (TPES/GDP)	100	78	58	72	59	63	62	-38.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	101	95	93	96	89	88	-12.3%

** Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 90-11
Sectoral Approach	-	2.47	-	0.00	2.47	8.2%
Main activity producer elec. and heat	-	1.89	-	0.00	1.89	8.3%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	-	0.01	-	-	0.01	498.9%
Transport	-	0.52	-	-	0.52	15.9%
<i>of which: road</i>	-	0.52	-	-	0.52	15.9%
Other	-	0.05	-	-	0.05	-40.7%
<i>of which: residential</i>	-	0.05	-	-	0.05	-40.7%
Reference Approach	-	2.52	-	0.00	2.52	10.4%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	0.05	-	-	0.05	-
<i>Memo: international marine bunkers</i>	-	3.86	-	-	3.86	+
<i>Memo: international aviation bunkers</i>	-	0.28	-	-	0.28	31.4%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - oil	1.89	83.7%	66.7	66.7
Road - oil	0.52	15.9%	18.3	85.0
Residential - oil	0.05	-40.7%	1.9	86.9
Manufacturing industries - oil	0.01	498.9%	0.3	87.2
Main activity prod. elec. and heat - other	0.00	x	0.1	87.3
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>2.47</i>	<i>8.2%</i>	<i>87.3</i>	<i>87.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Mexico

Figure 1. CO₂ emissions by fuel

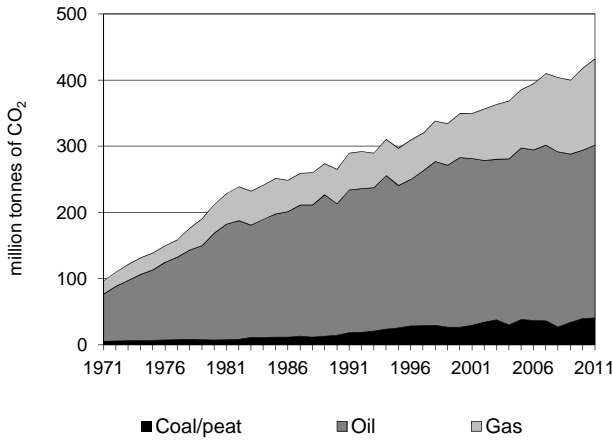


Figure 2. CO₂ emissions by sector

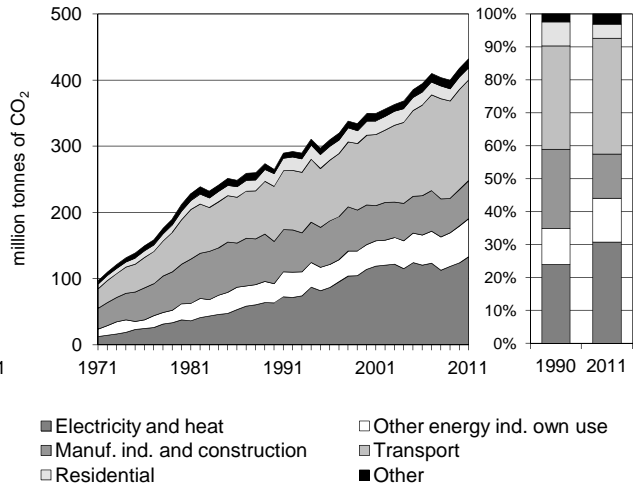


Figure 3. Reference vs Sectoral Approach

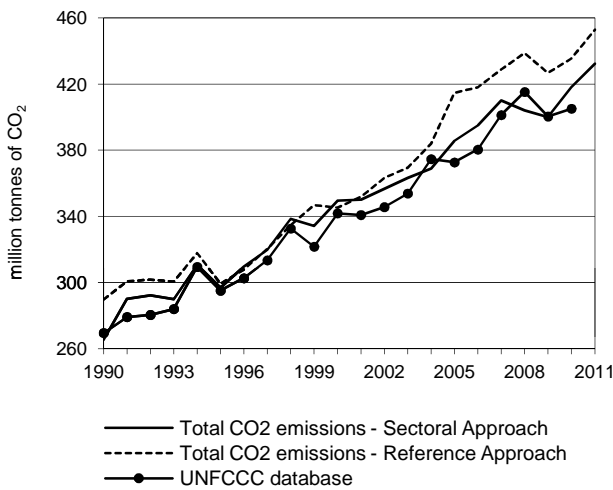


Figure 4. Electricity generation by fuel

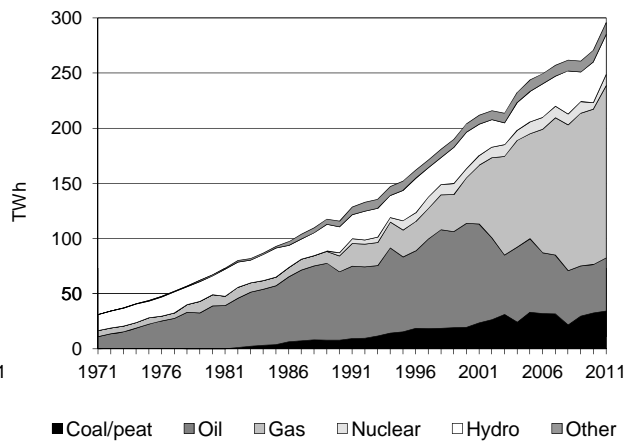


Figure 5. Changes in selected indicators *

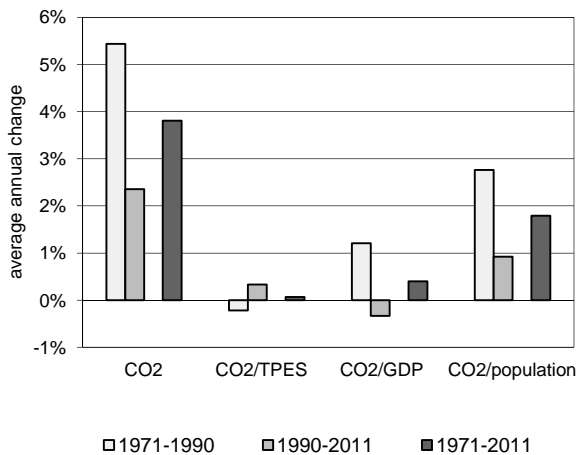
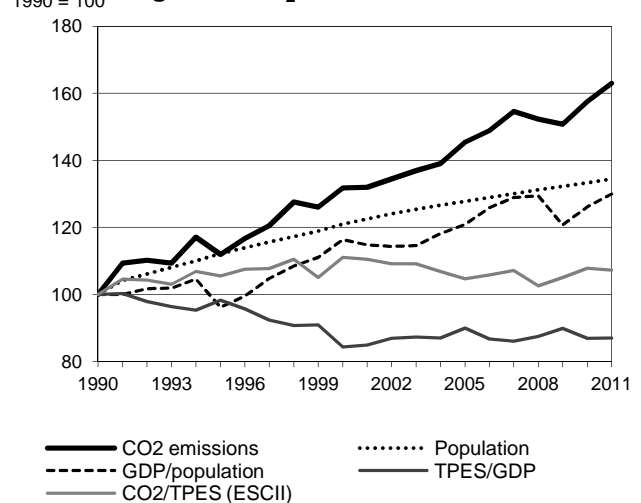


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Mexico

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	265.26	296.95	349.55	385.77	399.94	417.94	432.30	63.0%
TPES (PJ)	5 129	5 440	6 087	7 129	7 358	7 491	7 795	52.0%
GDP (billion 2005 USD)	547.80	590.98	770.74	846.09	874.21	920.75	956.82	74.7%
GDP PPP (billion 2005 USD)	837.66	903.69	1 178.55	1 293.79	1 336.78	1 407.94	1 463.10	74.7%
Population (millions)	81.25	91.17	98.30	103.83	107.44	108.29	109.22	34.4%
CO ₂ / TPES (tCO ₂ per TJ)	51.7	54.6	57.4	54.1	54.4	55.8	55.5	7.2%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.48	0.50	0.45	0.46	0.46	0.45	0.45	-6.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.32	0.33	0.30	0.30	0.30	0.30	0.30	-6.7%
CO ₂ / population (tCO ₂ per capita)	3.26	3.26	3.56	3.72	3.72	3.86	3.96	21.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	112	132	145	151	158	163	63.0%
Population	100	112	121	128	132	133	134	34.4%
GDP per population (GDP per capita)	100	96	116	121	121	126	130	29.9%
Energy intensity (TPES/GDP)	100	98	84	90	90	87	87	-13.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	106	111	105	105	108	107	7.2%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	40.78	261.00	130.53	-	432.30	63.0%
Main activity producer elec. and heat	31.95	31.78	55.64	-	119.36	87.6%
Unallocated autoproducers	1.28	4.90	7.60	-	13.78	x
Other energy industry own use	0.36	19.70	37.57	-	57.62	99.5%
Manufacturing industries and construction	7.19	22.82	27.51	-	57.52	-9.8%
Transport	-	152.01	0.03	-	152.04	82.5%
<i>of which: road</i>	-	147.57	0.03	-	147.60	84.6%
Other	-	29.79	2.19	-	31.98	24.6%
<i>of which: residential</i>	-	17.04	1.67	-	18.71	-2.3%
Reference Approach	39.12	284.56	129.22	-	452.91	56.3%
Diff. due to losses and/or transformation	1.27	17.52	-1.57	-	17.23	
Statistical differences	-2.93	6.04	0.27	-	3.38	
<i>Memo: international marine bunkers</i>	-	2.85	-	-	2.85	..
<i>Memo: international aviation bunkers</i>	-	8.12	-	-	8.12	55.3%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	147.57	84.5%	23.8	23.8
Main activity prod. elec. and heat - gas	55.64	593.8%	9.0	32.8
Other energy industry own use - gas	37.57	190.7%	6.1	38.9
Main activity prod. elec. and heat - coal/peat	31.95	346.3%	5.2	44.0
Main activity prod. elec. and heat - oil	31.78	-34.4%	5.1	49.1
Manufacturing industries - gas	27.51	-6.0%	4.4	53.6
Manufacturing industries - oil	22.82	-16.1%	3.7	57.3
Other energy industry own use - oil	19.70	24.7%	3.2	60.4
Residential - oil	17.04	-1.3%	2.7	63.2
<i>Memo: total CO₂ from fuel combustion</i>	<i>432.30</i>	<i>63.0%</i>	<i>69.8</i>	<i>69.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Republic of Moldova

Figure 1. CO₂ emissions by fuel

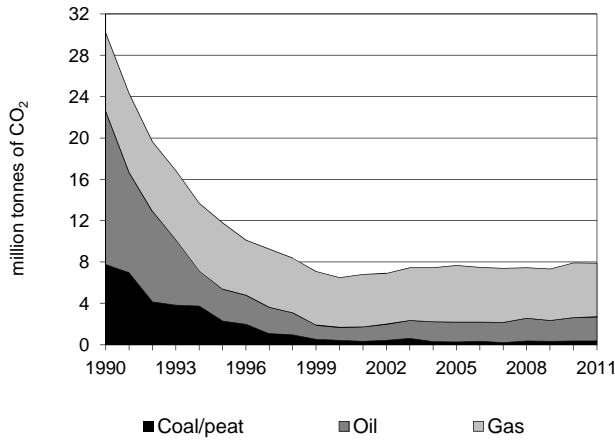


Figure 2. CO₂ emissions by sector

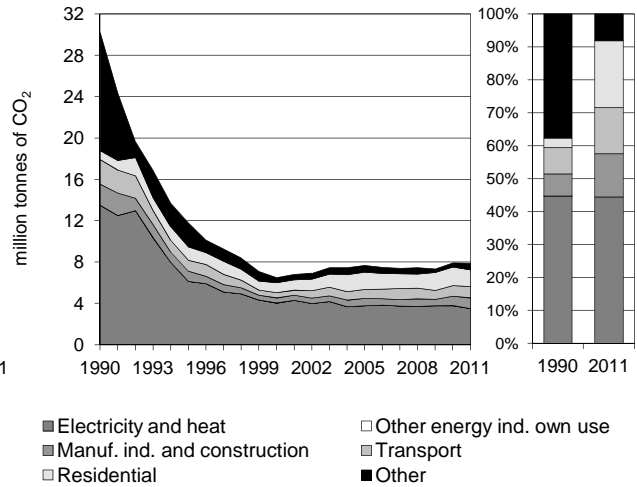


Figure 3. Reference vs Sectoral Approach

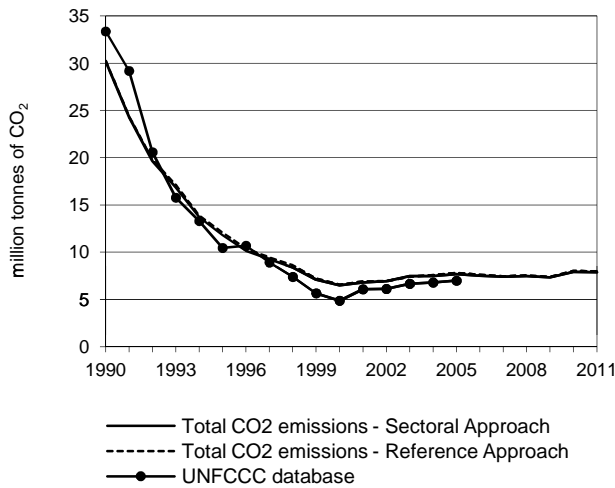


Figure 4. Electricity generation by fuel

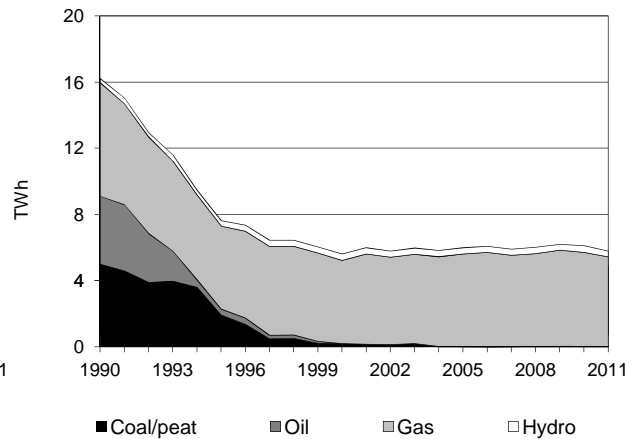


Figure 5. Changes in selected indicators *

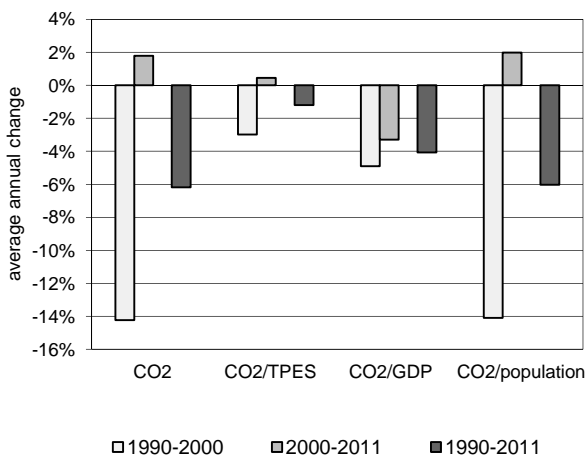
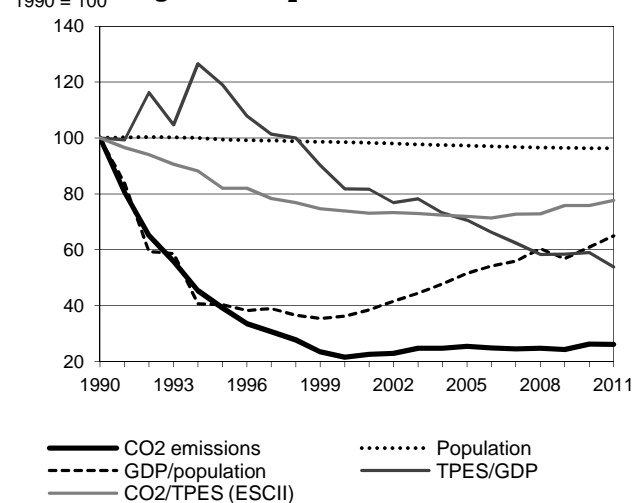


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Republic of Moldova

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	30.18	11.81	6.50	7.68	7.33	7.93	7.89	-73.9%
TPES (PJ)	414	198	121	147	133	143	139	-66.3%
GDP (billion 2005 USD)	5.96	2.39	2.12	2.99	3.27	3.50	3.73	-37.5%
GDP PPP (billion 2005 USD)	16.94	6.79	6.03	8.49	9.29	9.95	10.59	-37.5%
Population (millions)	3.70	3.68	3.64	3.60	3.57	3.56	3.56	-3.7%
CO ₂ / TPES (tCO ₂ per TJ)	72.9	59.8	53.9	52.4	55.2	55.3	56.6	-22.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	5.06	4.94	3.06	2.57	2.24	2.26	2.12	-58.2%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.78	1.74	1.08	0.90	0.79	0.80	0.75	-58.2%
CO ₂ / population (tCO ₂ per capita)	8.17	3.21	1.79	2.14	2.06	2.23	2.22	-72.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	39	22	25	24	26	26	-73.9%
Population	100	99	98	97	96	96	96	-3.7%
GDP per population (GDP per capita)	100	40	36	52	57	61	65	-35.1%
Energy intensity (TPES/GDP)	100	119	82	71	58	59	54	-46.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	82	74	72	76	76	78	-22.4%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.39	2.32	5.18	-	7.89	-73.9%
Main activity producer elec. and heat	-	0.00	3.33	-	3.33	-75.3%
Unallocated autoproducers	0.01	0.05	0.12	-	0.17	x
Other energy industry own use	-	-	-	-	-	-100.0%
Manufacturing industries and construction	0.13	0.03	0.88	-	1.03	-49.1%
Transport	-	1.10	0.00	-	1.11	-53.7%
<i>of which: road</i>	-	1.05	0.00	-	1.06	-55.0%
Other	0.25	1.14	0.85	-	2.24	-81.7%
<i>of which: residential</i>	0.08	0.94	0.58	-	1.60	82.6%
Reference Approach	0.39	2.33	5.27	-	7.99	-73.6%
Diff. due to losses and/or transformation	-	0.01	0.10	-	0.10	
Statistical differences	-	0.00	0.00	-	0.00	
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.04	-	-	0.04	-81.9%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - gas	3.33	-37.2%	26.9	26.9
Road - oil	1.05	-54.9%	8.5	35.4
Residential - oil	0.94	156.5%	7.6	43.0
Manufacturing industries - gas	0.88	-28.8%	7.1	50.1
Residential - gas	0.58	14.0%	4.7	54.8
Non-specified other - gas	0.26	-49.3%	2.1	56.9
Non-specified other - oil	0.20	-97.5%	1.6	58.6
Non-specified other sectors - coal/peat	0.17	-93.3%	1.4	60.0
Manufacturing industries - coal/peat	0.13	-83.7%	1.0	61.0
<i>Memo: total CO₂ from fuel combustion</i>	<i>7.89</i>	<i>-73.9%</i>	<i>63.8</i>	<i>63.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Mongolia

Figure 1. CO₂ emissions by fuel

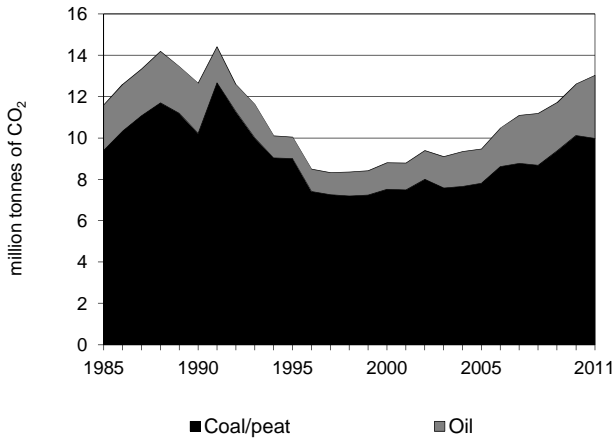


Figure 2. CO₂ emissions by sector

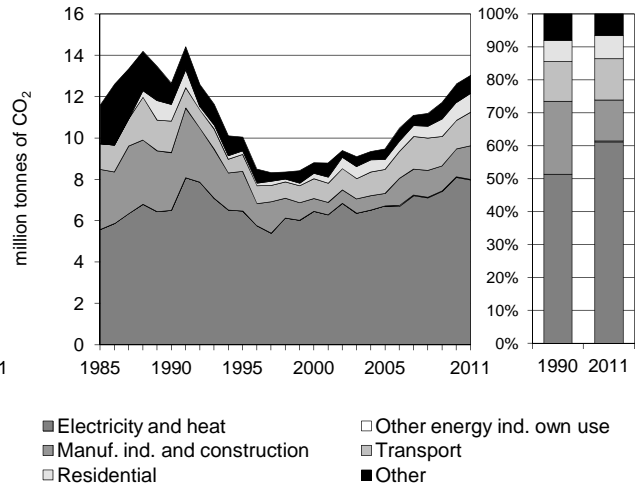


Figure 3. Reference vs Sectoral Approach

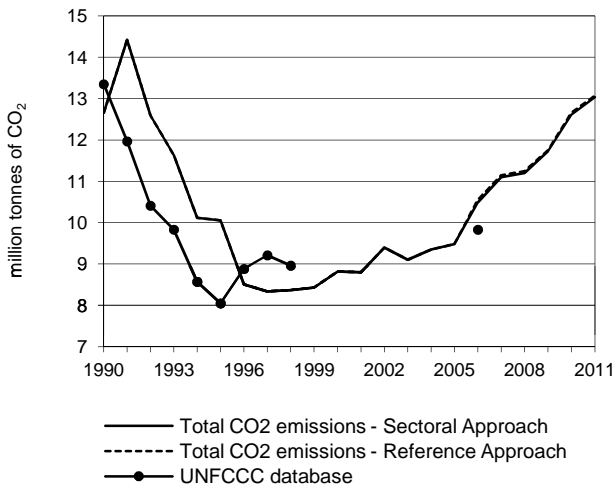


Figure 4. Electricity generation by fuel

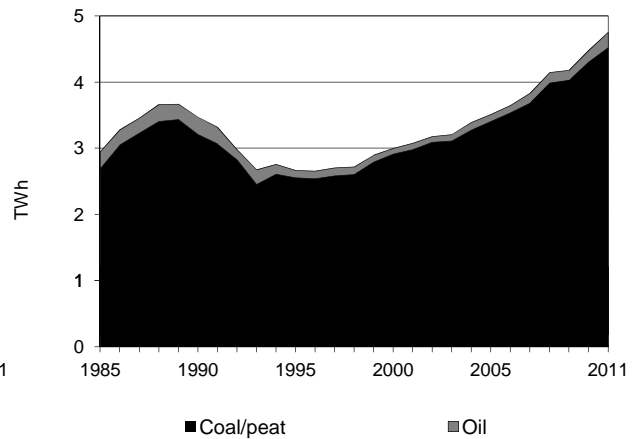


Figure 5. Changes in selected indicators *

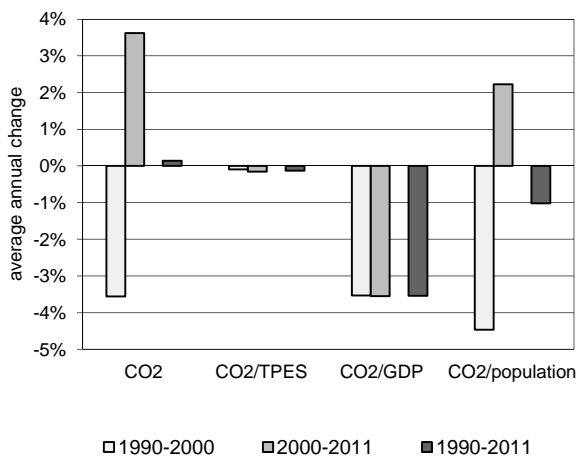
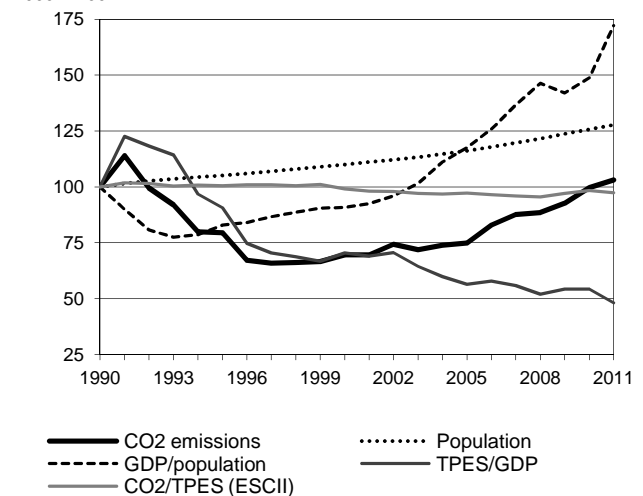


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Mongolia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	12.66	10.05	8.81	9.48	11.72	12.61	13.04	3.0%
TPES (PJ)	143	113	100	110	136	145	151	5.8%
GDP (billion 2005 USD)	1.85	1.61	1.84	2.52	3.25	3.45	4.06	119.6%
GDP PPP (billion 2005 USD)	5.34	4.65	5.33	7.29	9.38	9.98	11.73	119.7%
Population (millions)	2.19	2.31	2.41	2.55	2.71	2.76	2.80	27.7%
CO ₂ / TPES (tCO ₂ per TJ)	88.7	89.1	87.8	86.3	86.1	87.2	86.3	-2.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	6.85	6.24	4.78	3.76	3.61	3.65	3.21	-53.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	2.37	2.16	1.66	1.30	1.25	1.26	1.11	-53.1%
CO ₂ / population (tCO ₂ per capita)	5.77	4.36	3.66	3.72	4.32	4.58	4.66	-19.3%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	79	70	75	93	100	103	3.0%
Population	100	105	110	116	124	126	128	27.7%
GDP per population (GDP per capita)	100	83	91	118	142	149	172	72.0%
Energy intensity (TPES/GDP)	100	91	70	56	54	54	48	-51.8%
Carbon intensity: ESCII (CO ₂ /TPES)	100	100	99	97	97	98	97	-2.7%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	9.99	3.05	-	-	13.04	3.0%
Main activity producer elec. and heat	7.73	0.25	-	-	7.98	22.7%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	0.03	-	-	-	0.03	x
Manufacturing industries and construction	0.54	1.09	-	-	1.63	-41.9%
Transport	0.08	1.55	-	-	1.63	6.7%
<i>of which: road</i>	-	1.10	-	-	1.10	-0.4%
Other	1.62	0.16	-	-	1.78	-3.0%
<i>of which: residential</i>	0.91	-	-	-	0.91	13.3%
Reference Approach	10.02	3.05	-	-	13.07	3.3%
Diff. due to losses and/or transformation	0.04	-	-	-	0.04	
Statistical differences	-	-	-	-	-	
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.08	-	-	0.08	525.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	7.73	25.1%	34.6	34.6
Road - oil	1.10	-0.4%	4.9	39.5
Manufacturing industries - oil	1.09	67.7%	4.9	44.4
Residential - coal/peat	0.91	13.3%	4.1	48.4
Non-specified other sectors - coal/peat	0.70	-24.6%	3.1	51.6
Manufacturing industries - coal/peat	0.54	-74.9%	2.4	54.0
Other transport - oil	0.45	75.3%	2.0	56.0
Main activity prod. elec. and heat - oil	0.25	-22.8%	1.1	57.1
Non-specified other - oil	0.16	70.0%	0.7	57.9
<i>Memo: total CO₂ from fuel combustion</i>	<i>13.04</i>	<i>3.0%</i>	<i>58.3</i>	<i>58.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Montenegro

Figure 1. CO₂ emissions by fuel

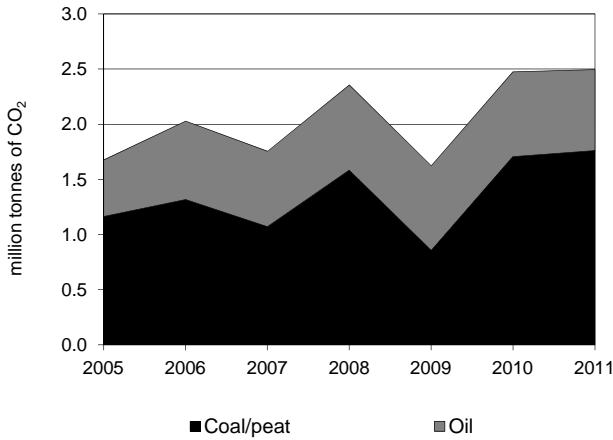


Figure 2. CO₂ emissions by sector

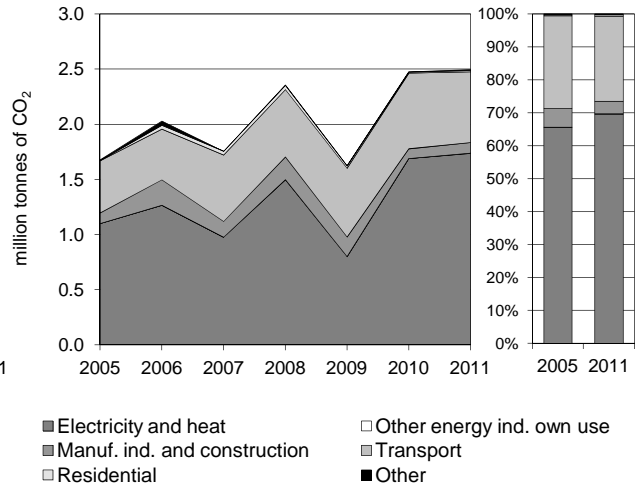


Figure 3. Reference vs Sectoral Approach

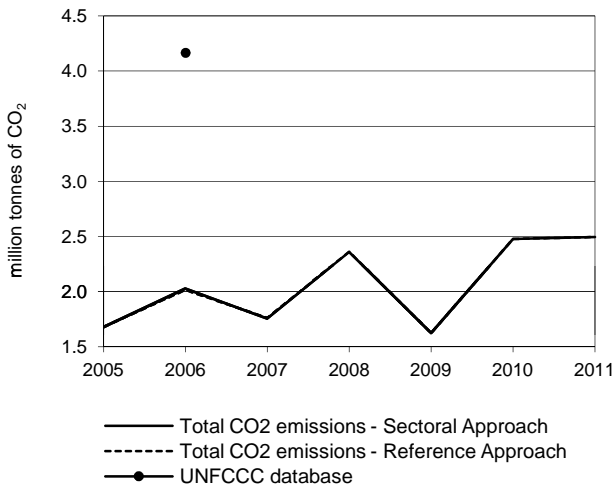


Figure 4. Electricity generation by fuel

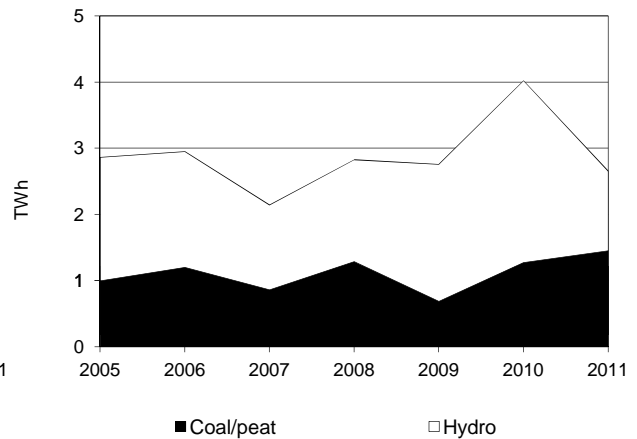


Figure 5. Changes in selected indicators *

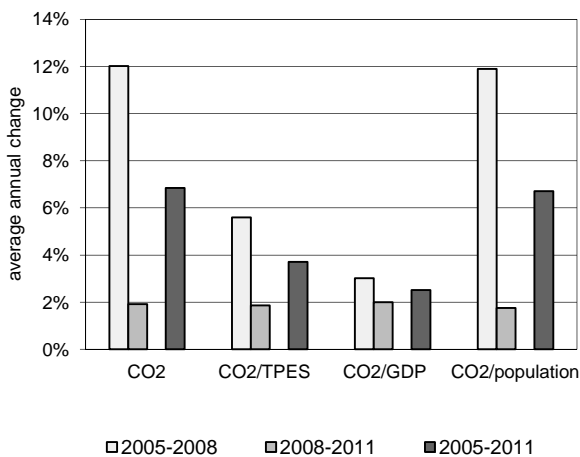
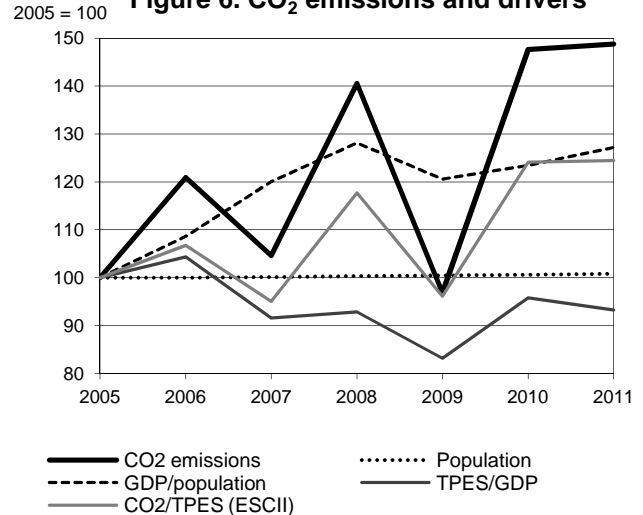


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Montenegro *

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 05-11
CO ₂ Sectoral Approach (MtCO ₂)	1.68	1.62	2.48	2.50	48.8%
TPES (PJ)	41	42	49	49	19.5%
GDP (billion 2005 USD)	2.26	2.74	2.80	2.89	28.2%
GDP PPP (billion 2005 USD)	5.16	6.26	6.41	6.62	28.2%
Population (millions)	0.63	0.63	0.63	0.63	0.8%
CO ₂ / TPES (tCO ₂ per TJ)	40.6	39.0	50.4	50.5	24.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.74	0.59	0.88	0.86	16.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.32	0.26	0.39	0.38	16.0%
CO ₂ / population (tCO ₂ per capita)	2.68	2.58	3.93	3.95	47.6%
CO₂ emissions and drivers - Kaya decomposition (2005=100) **								
CO ₂ emissions	100	97	148	149	48.8%
Population	100	100	101	101	0.8%
GDP per population (GDP per capita)	100	121	123	127	27.2%
Energy intensity (TPES/GDP)	100	83	96	93	-6.8%
Carbon intensity: ESCII (CO ₂ /TPES)	100	96	124	124	24.5%

* Prior to 2005, data for Montenegro were included in Serbia. ** Please see Part I, Chapter 1 for methodological notes. Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 05-11
Sectoral Approach	1.76	0.73	-	-	2.50	48.8%
Main activity producer elec. and heat	1.74	-	-	-	1.74	57.8%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	0.00	-	-	0.00	235.0%
Manufacturing industries and construction	0.01	0.08	-	-	0.10	0.4%
Transport	-	0.64	-	-	0.64	35.7%
<i>of which: road</i>	-	0.63	-	-	0.63	37.6%
Other	0.01	0.01	-	-	0.02	119.4%
<i>of which: residential</i>	0.01	-	-	-	0.01	250.0%
Reference Approach	1.76	0.73	-	-	2.50	48.6%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	0.00	-	-	0.00	-
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.03	-	-	0.03	-23.1%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 05-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	1.74	57.8%	..	..
Road - oil	0.63	37.6%	..	..
Manufacturing industries - oil	0.08	125.8%	..	..
Manufacturing industries - coal/peat	0.01	-76.8%	..	..
Residential - coal/peat	0.01	250.0%	..	..
Other transport - oil	0.01	-36.8%	..	..
Non-specified other - oil	0.01	60.1%	..	..
Other energy industry own use - oil	0.00	x	..	..
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>2.50</i>	<i>48.8%</i>	-	-

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Morocco

Figure 1. CO₂ emissions by fuel

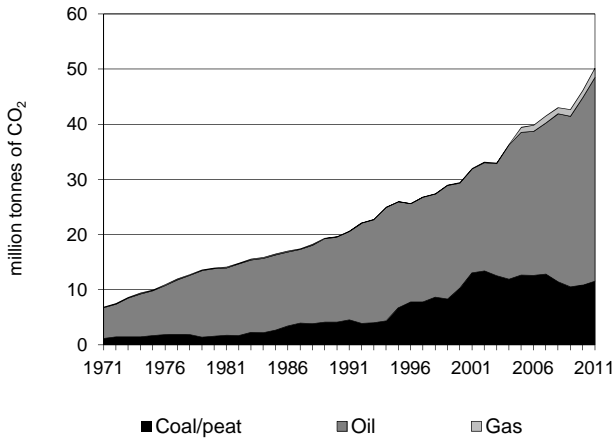


Figure 2. CO₂ emissions by sector

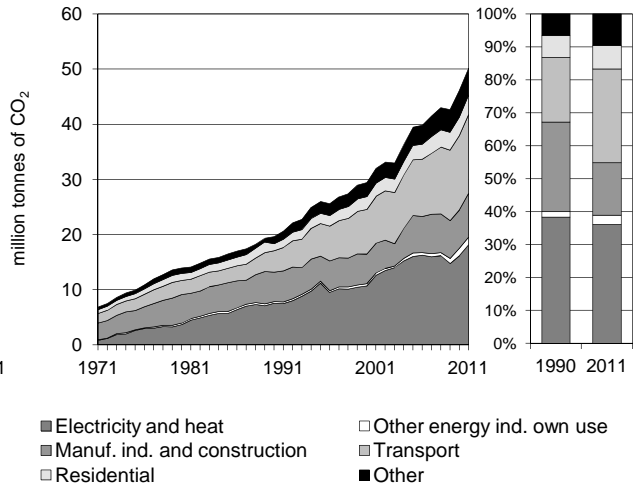


Figure 3. Reference vs Sectoral Approach

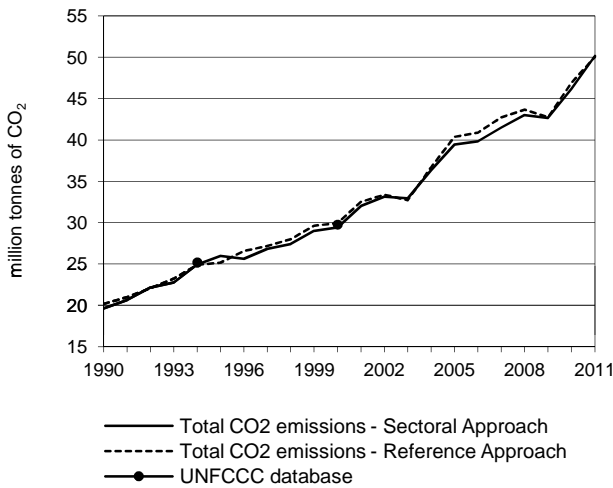


Figure 4. Electricity generation by fuel

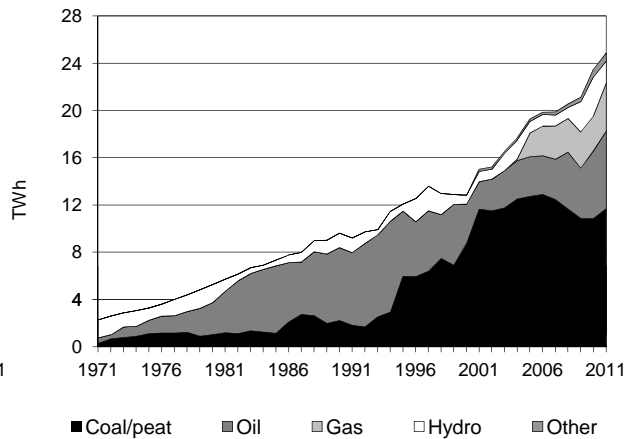


Figure 5. Changes in selected indicators *

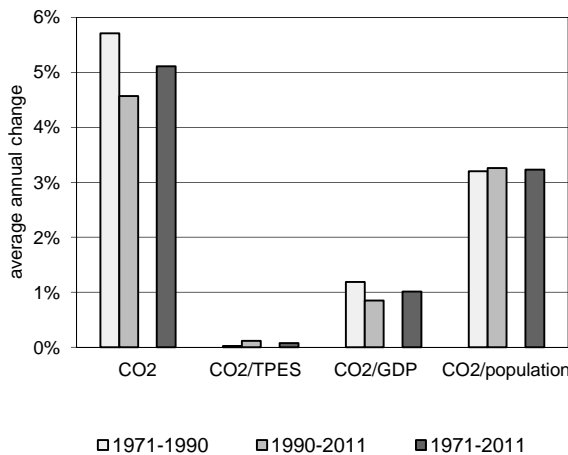
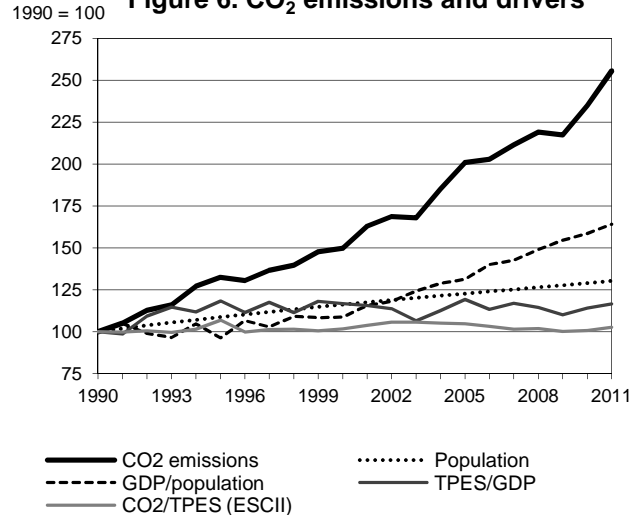


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Morocco

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	19.64	25.99	29.42	39.45	42.67	46.14	50.16	155.4%
TPES (PJ)	291	360	429	558	630	678	724	149.0%
GDP (billion 2005 USD)	36.97	38.70	46.69	59.52	72.87	75.55	78.99	113.7%
GDP PPP (billion 2005 USD)	67.18	70.33	84.84	108.17	132.42	137.29	143.54	113.7%
Population (millions)	24.78	26.93	28.79	30.39	31.64	31.95	32.27	30.2%
CO ₂ / TPES (tCO ₂ per TJ)	67.6	72.2	68.6	70.7	67.7	68.1	69.3	2.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.53	0.67	0.63	0.66	0.59	0.61	0.64	19.5%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.29	0.37	0.35	0.36	0.32	0.34	0.35	19.5%
CO ₂ / population (tCO ₂ per capita)	0.79	0.97	1.02	1.30	1.35	1.44	1.55	96.1%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	132	150	201	217	235	255	155.4%
Population	100	109	116	123	128	129	130	30.2%
GDP per population (GDP per capita)	100	96	109	131	154	159	164	64.1%
Energy intensity (TPES/GDP)	100	118	117	119	110	114	117	16.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	107	102	105	100	101	103	2.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	11.56	36.95	1.66	-	50.16	155.4%
Main activity producer elec. and heat	11.48	4.15	1.55	-	17.18	164.8%
Unallocated autoproducers	-	0.95	-	-	0.95	-9.5%
Other energy industry own use	0.02	1.39	-	-	1.41	345.0%
Manufacturing industries and construction	0.06	7.80	0.12	-	7.97	49.3%
Transport	-	14.26	-	-	14.26	270.1%
<i>of which: road</i>	-	14.26	-	-	14.26	270.1%
Other	-	8.38	-	-	8.38	223.7%
<i>of which: residential</i>	-	3.54	-	-	3.54	175.5%
Reference Approach	11.56	36.83	1.66	-	50.05	148.3%
Diff. due to losses and/or transformation	-	0.15	-	-	0.15	
Statistical differences	-	-0.26	0.00	-	-0.26	
<i>Memo: international marine bunkers</i>	-	0.40	-	-	0.40	533.7%
<i>Memo: international aviation bunkers</i>	-	1.78	-	-	1.78	126.1%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	14.26	270.1%	19.8	19.8
Main activity prod. elec. and heat - coal/peat	11.48	317.7%	15.9	35.8
Manufacturing industries - oil	7.80	102.1%	10.8	46.6
Non-specified other - oil	4.84	271.2%	6.7	53.3
Main activity prod. elec. and heat - oil	4.15	11.1%	5.8	59.1
Residential - oil	3.54	175.5%	4.9	64.0
Main activity prod. elec. and heat - gas	1.55	x	2.1	66.1
Other energy industry own use - oil	1.39	338.5%	1.9	68.1
Unallocated autoproducers - oil	0.95	-9.5%	1.3	69.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>50.16</i>	<i>155.4%</i>	<i>69.7</i>	<i>69.7</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Mozambique

Figure 1. CO₂ emissions by fuel

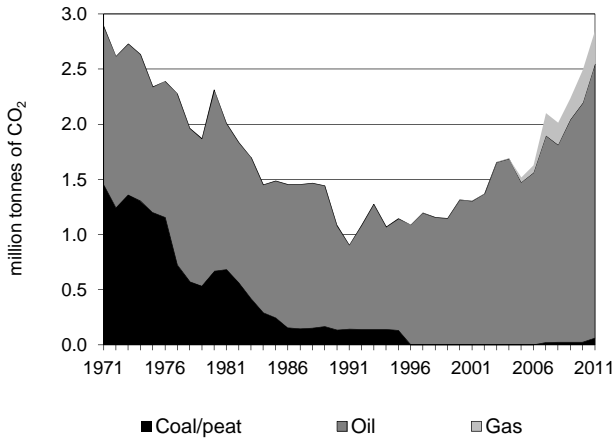


Figure 2. CO₂ emissions by sector

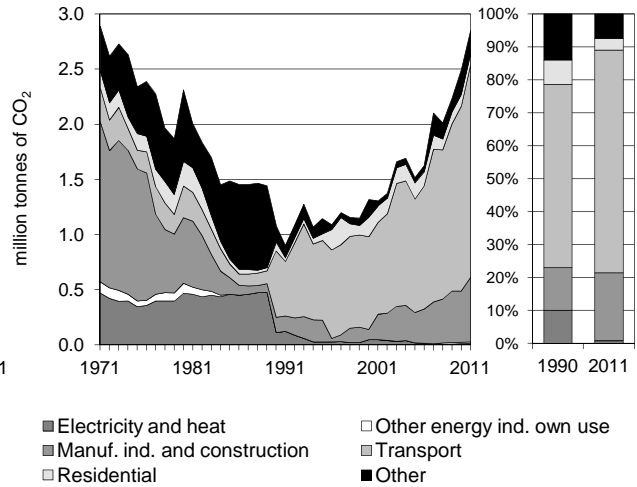


Figure 3. Reference vs Sectoral Approach

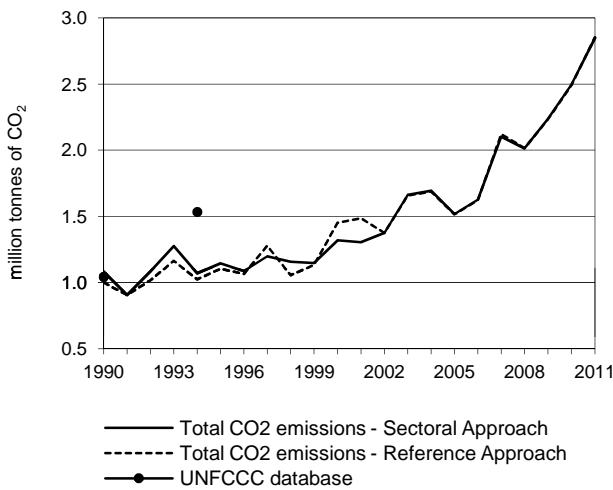


Figure 4. Electricity generation by fuel

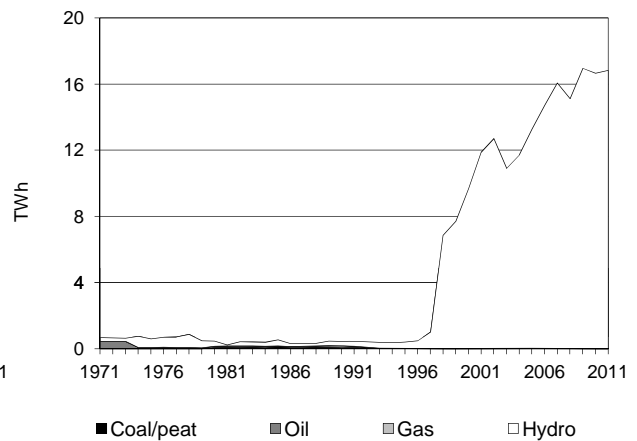


Figure 5. Changes in selected indicators *

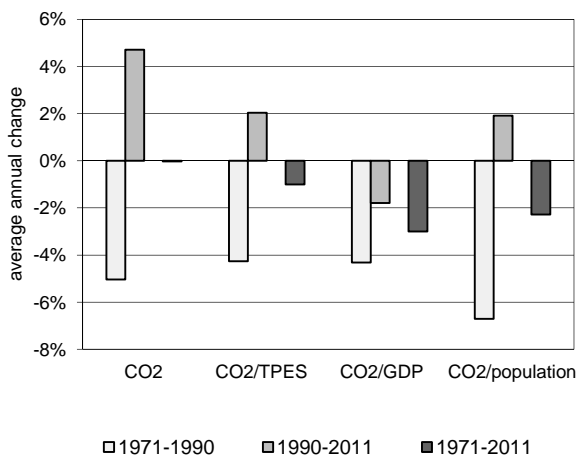
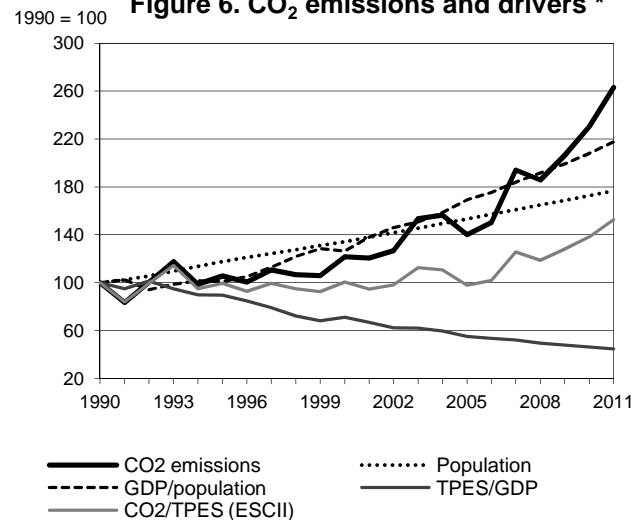


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Mozambique

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	1.08	1.14	1.32	1.52	2.24	2.49	2.85	163.0%
TPES (PJ)	248	263	300	355	400	413	427	72.3%
GDP (billion 2005 USD)	2.54	3.01	4.31	6.58	8.52	9.10	9.75	284.5%
GDP PPP (billion 2005 USD)	5.36	6.36	9.11	13.91	18.02	19.24	20.61	284.5%
Population (millions)	13.55	15.93	18.20	20.77	22.86	23.39	23.93	76.6%
CO ₂ / TPES (tCO ₂ per TJ)	4.4	4.3	4.4	4.3	5.6	6.0	6.7	52.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.43	0.38	0.31	0.23	0.26	0.27	0.29	-31.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.20	0.18	0.14	0.11	0.12	0.13	0.14	-31.6%
CO ₂ / population (tCO ₂ per capita)	0.08	0.07	0.07	0.07	0.10	0.11	0.12	48.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	106	122	140	206	230	263	163.0%
Population	100	118	134	153	169	173	177	76.6%
GDP per population (GDP per capita)	100	101	127	169	199	208	218	117.7%
Energy intensity (TPES/GDP)	100	89	71	55	48	46	45	-55.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	100	100	98	128	138	153	52.7%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.06	2.49	0.30	-	2.85	163.0%
Main activity producer elec. and heat	-	-	0.02	-	0.02	-86.1%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	0.01	-	-	-	0.01	x
Manufacturing industries and construction	0.05	0.37	0.17	-	0.58	318.5%
Transport	-	1.92	0.00	-	1.93	219.9%
<i>of which: road</i>	-	1.76	0.00	-	1.76	235.4%
Other	-	0.19	0.12	-	0.31	34.5%
<i>of which: residential</i>	-	0.10	0.00	-	0.10	23.1%
Reference Approach	0.06	2.49	0.30	-	2.85	185.1%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-0.00	0.00	-	-	0.00	-
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.19	-	-	0.19	43.9%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	1.76	234.7%	10.8	10.8
Manufacturing industries - oil	0.37	507.7%	2.3	13.1
Manufacturing industries - gas	0.17	x	1.0	14.1
Other transport - oil	0.16	112.5%	1.0	15.1
Non-specified other - gas	0.12	x	0.7	15.8
Residential - oil	0.10	22.7%	0.6	16.4
Non-specified other - oil	0.10	-37.0%	0.6	17.0
Manufacturing industries - coal/peat	0.05	-38.2%	0.3	17.3
Main activity prod. elec. and heat - gas	0.02	x	0.1	17.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>2.85</i>	<i>163.0%</i>	<i>17.5</i>	<i>17.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Myanmar

Figure 1. CO₂ emissions by fuel

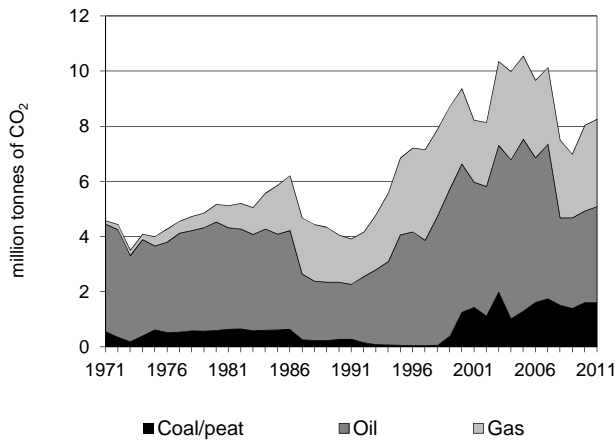


Figure 2. CO₂ emissions by sector

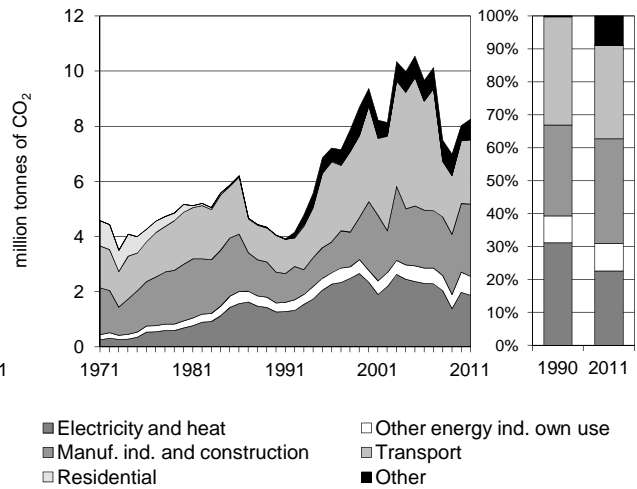


Figure 3. Reference vs Sectoral Approach

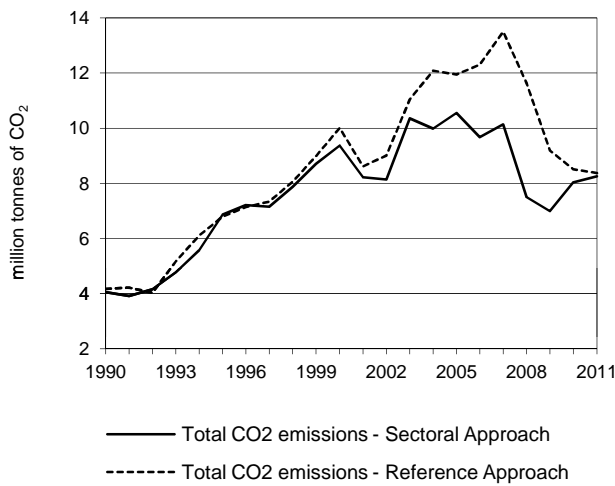


Figure 4. Electricity generation by fuel

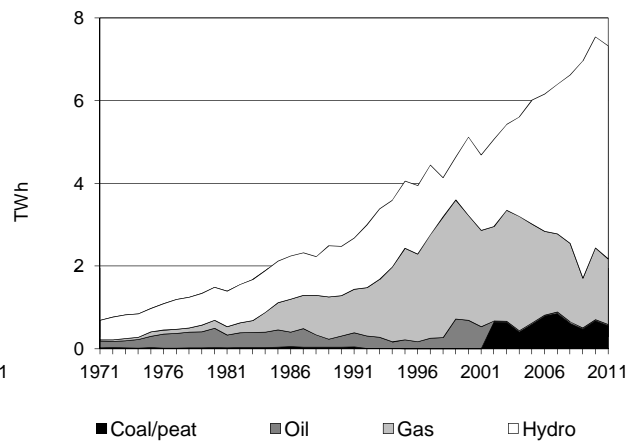


Figure 5. Changes in selected indicators *

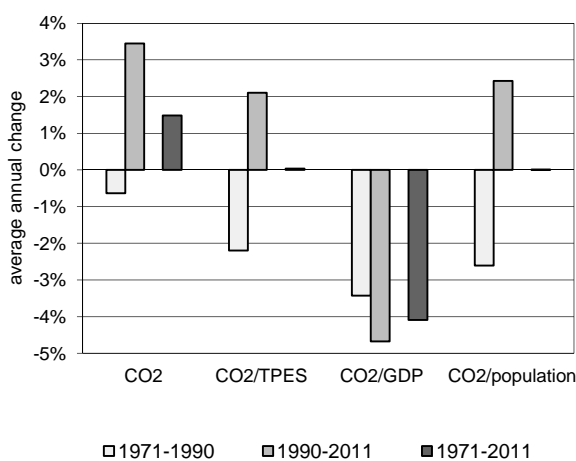
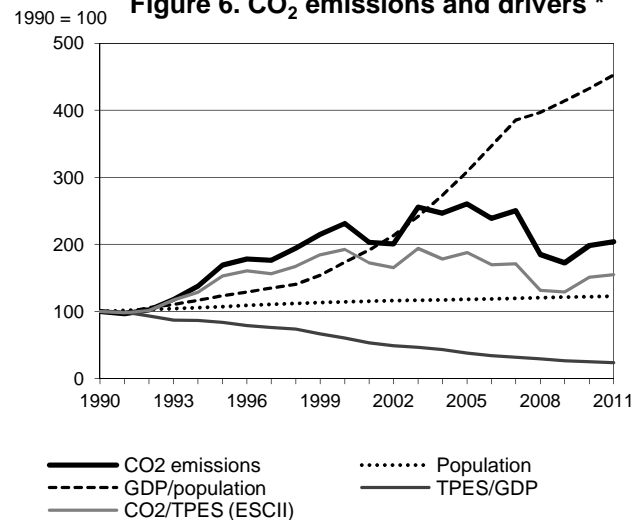


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Myanmar

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	4.05	6.85	9.37	10.55	6.99	8.03	8.25	103.8%
TPES (PJ)	447	494	538	620	596	586	589	31.6%
GDP (billion 2005 USD)	3.30	4.36	6.55	11.99	16.54	17.41	18.37	456.9%
GDP PPP (billion 2005 USD)	13.47	17.80	26.74	48.98	67.56	71.12	75.02	457.1%
Population (millions)	39.27	42.13	44.96	46.32	47.60	47.96	48.34	23.1%
CO ₂ / TPES (tCO ₂ per TJ)	9.1	13.9	17.4	17.0	11.7	13.7	14.0	54.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.23	1.57	1.43	0.88	0.42	0.46	0.45	-63.4%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.30	0.39	0.35	0.22	0.10	0.11	0.11	-63.4%
CO ₂ / population (tCO ₂ per capita)	0.10	0.16	0.21	0.23	0.15	0.17	0.17	65.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	169	231	260	172	198	204	103.8%
Population	100	107	114	118	121	122	123	23.1%
GDP per population (GDP per capita)	100	123	173	308	414	432	453	352.6%
Energy intensity (TPES/GDP)	100	84	61	38	27	25	24	-76.4%
Carbon intensity: ESCII (CO ₂ /TPES)	100	153	192	188	129	151	155	54.8%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	1.60	3.49	3.16	-	8.25	103.8%
Main activity producer elec. and heat	0.69	0.02	1.15	-	1.87	47.9%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	0.17	0.52	-	0.69	110.3%
Manufacturing industries and construction	0.85	0.71	1.06	-	2.62	134.4%
Transport	-	1.94	0.39	-	2.34	75.8%
<i>of which: road</i>	-	1.30	0.39	-	1.69	34.4%
Other	0.06	0.64	0.04	-	0.74	+
<i>of which: residential</i>	-	0.00	-	-	0.00	-67.3%
Reference Approach	1.60	3.55	3.21	-	8.36	100.8%
Diff. due to losses and/or transformation	-	0.01	-	-	0.01	
Statistical differences	0.00	0.05	0.05	-	0.10	
<i>Memo: international marine bunkers</i>	-	0.01	-	-	0.01	x
<i>Memo: international aviation bunkers</i>	-	0.06	-	-	0.06	200.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	1.30	3.4%	1.1	1.1
Main activity prod. elec. and heat - gas	1.15	13.5%	1.0	2.1
Manufacturing industries - gas	1.06	132.6%	0.9	3.0
Manufacturing industries - coal/peat	0.85	295.0%	0.7	3.8
Manufacturing industries - oil	0.71	59.2%	0.6	4.4
Main activity prod. elec. and heat - coal/peat	0.69	+	0.6	5.0
Other transport - oil	0.64	826.6%	0.6	5.6
Non-specified other - oil	0.64	+	0.6	6.1
Other energy industry own use - gas	0.52	118.4%	0.4	6.6
<i>Memo: total CO₂ from fuel combustion</i>	<i>8.25</i>	<i>103.8%</i>	<i>7.2</i>	<i>7.2</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Namibia

Figure 1. CO₂ emissions by fuel

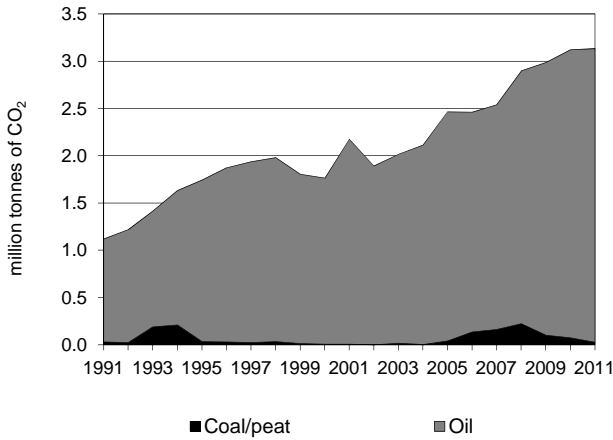


Figure 2. CO₂ emissions by sector

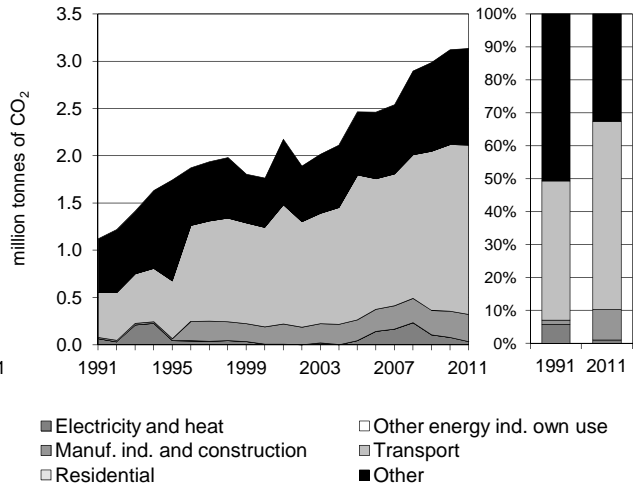


Figure 3. Reference vs Sectoral Approach

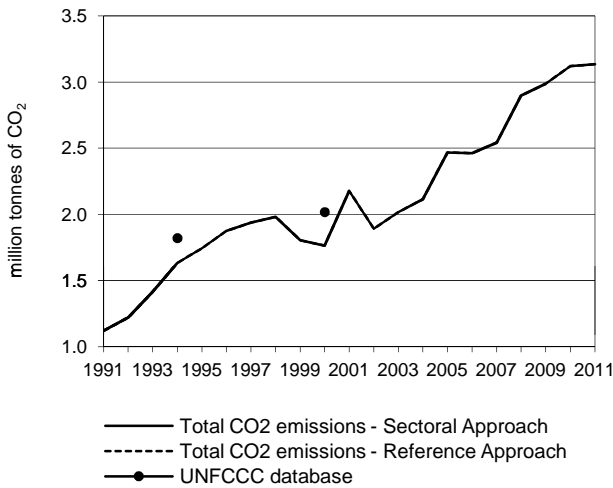


Figure 4. Electricity generation by fuel

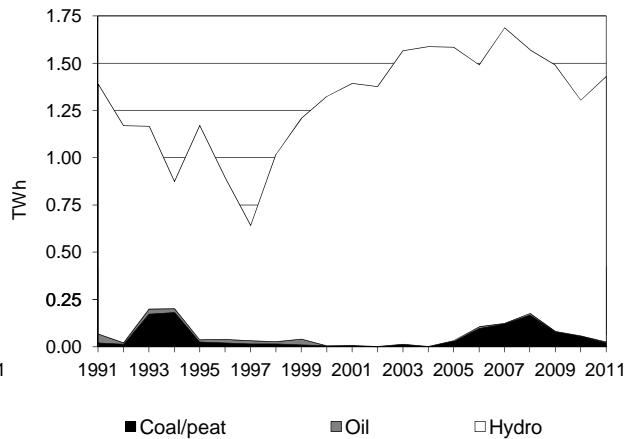


Figure 5. Changes in selected indicators *

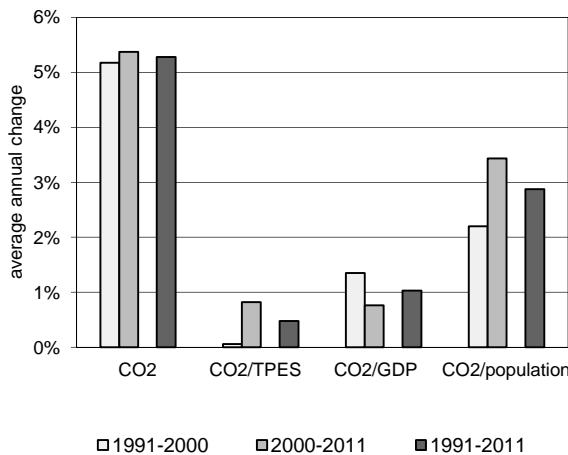
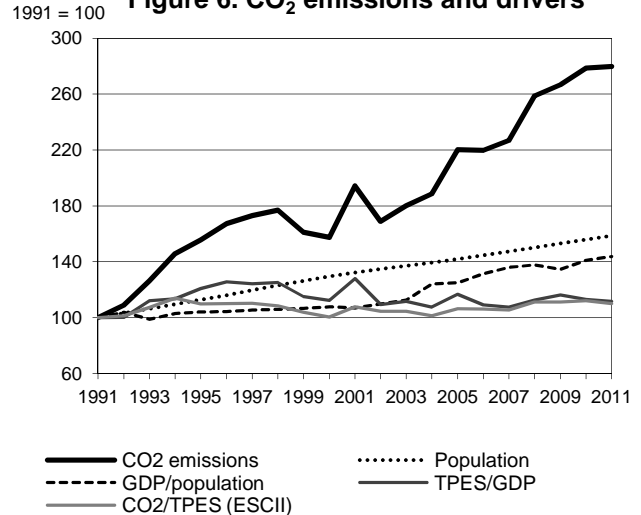


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Namibia *

Key indicators

	1990	1991	2000	2005	2009	2010	2011	% change 91-11
CO ₂ Sectoral Approach (MtCO ₂)	..	1.12	1.76	2.47	2.99	3.12	3.13	179.8%
TPES (PJ)	..	26	41	54	63	65	67	154.4%
GDP (billion 2005 USD)	..	4.09	5.71	7.26	8.43	8.99	9.33	128.0%
GDP PPP (billion 2005 USD)	..	6.10	8.51	10.83	12.57	13.40	13.91	128.0%
Population (millions)	..	1.47	1.90	2.08	2.24	2.28	2.32	58.6%
CO ₂ / TPES (tCO ₂ per TJ)	..	42.8	43.1	45.6	47.7	48.1	47.1	10.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	..	0.27	0.31	0.34	0.35	0.35	0.34	22.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	..	0.18	0.21	0.23	0.24	0.23	0.23	22.7%
CO ₂ / population (tCO ₂ per capita)	..	0.76	0.93	1.19	1.33	1.37	1.35	76.4%
CO₂ emissions and drivers - Kaya decomposition (1991=100) **								
CO ₂ emissions	..	100	157	220	267	279	280	179.8%
Population	..	100	129	142	153	156	159	58.6%
GDP per population (GDP per capita)	..	100	108	125	135	141	144	43.7%
Energy intensity (TPES/GDP)	..	100	112	117	116	113	112	11.6%
Carbon intensity: ESCII (CO ₂ /TPES)	..	100	101	106	111	112	110	10.0%

* Prior to 1991, data for Namibia were included in Other Africa. ** Please see Part I, Chapter 1 for methodological notes. Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 91-11
Sectoral Approach	0.03	3.11	-	-	3.13	179.8%
Main activity producer elec. and heat	0.03	0.01	-	-	0.03	-47.6%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	-	0.29	-	-	0.29	+
Transport	-	1.79	-	-	1.79	279.3%
<i>of which: road</i>	-	1.68	-	-	1.68	270.6%
Other	-	1.02	-	-	1.02	79.7%
<i>of which: residential</i>	-	-	-	-	-	-
Reference Approach	0.03	3.11	-	-	3.13	179.8%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	-0.00	-	-	-0.00	-
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.12	-	-	0.12	50.0%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 91-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	1.68	270.6%	15.0	15.0
Non-specified other - oil	1.02	79.7%	9.1	24.1
Manufacturing industries - oil	0.29	+	2.6	26.7
Other transport - oil	0.11	490.7%	1.0	27.7
Main activity prod. elec. and heat - coal/peat	0.03	-13.3%	0.2	27.9
Main activity prod. elec. and heat - oil	0.01	-80.0%	0.1	28.0
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>3.13</i>	<i>179.8%</i>	<i>28.0</i>	<i>28.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Nepal

Figure 1. CO₂ emissions by fuel

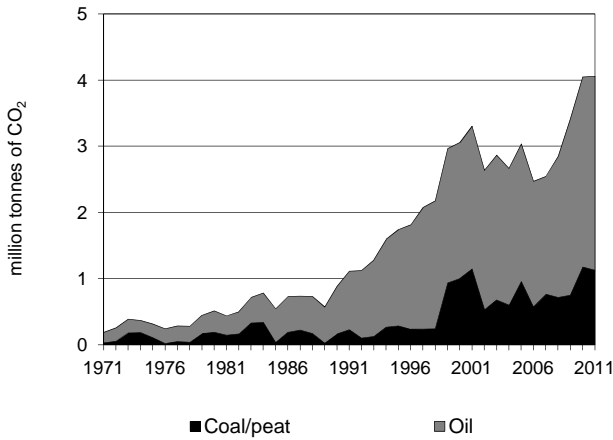


Figure 2. CO₂ emissions by sector

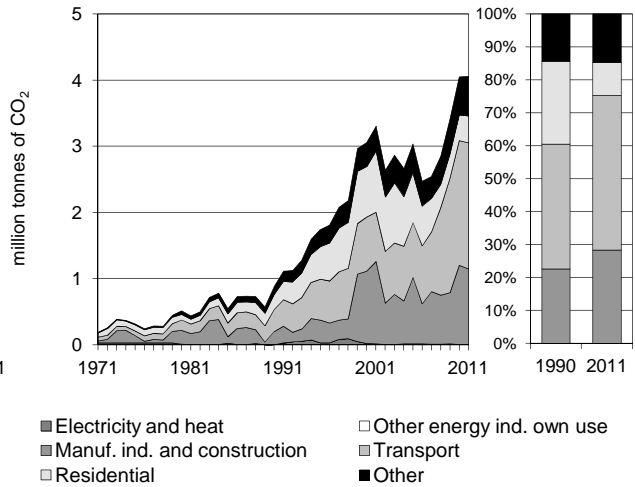


Figure 3. Reference vs Sectoral Approach

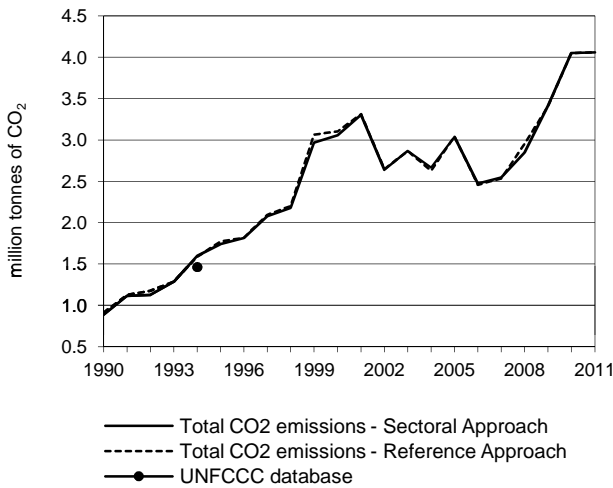


Figure 4. Electricity generation by fuel

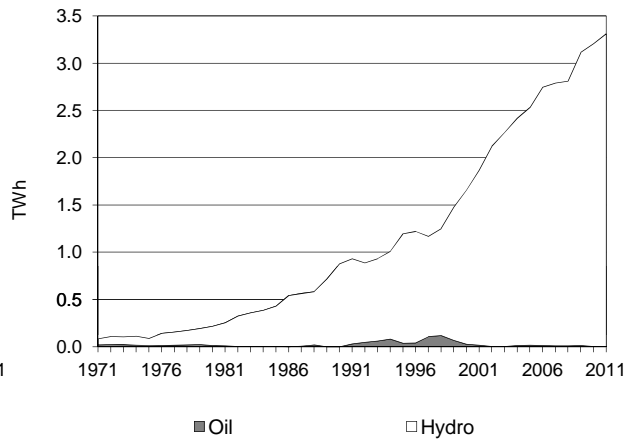


Figure 5. Changes in selected indicators *

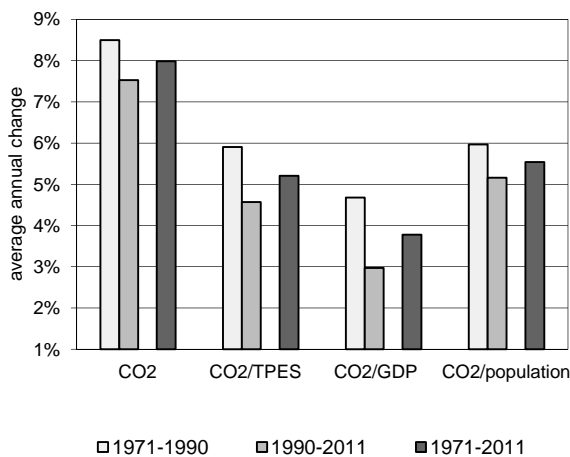
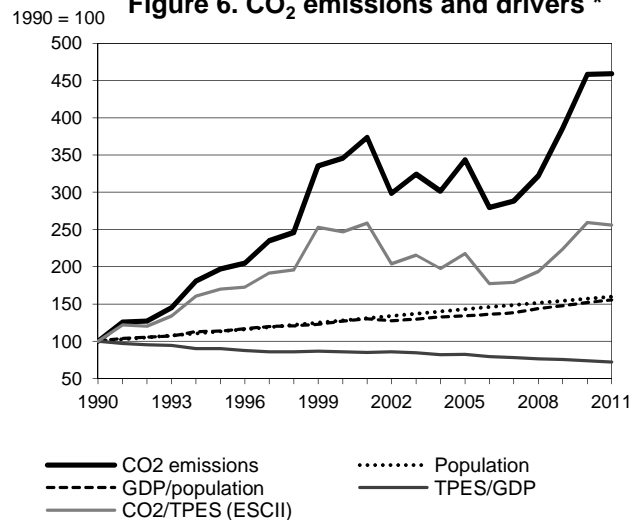


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Nepal

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	0.88	1.74	3.06	3.04	3.41	4.05	4.06	359.1%
TPES (PJ)	242	281	339	382	418	428	435	79.5%
GDP (billion 2005 USD)	4.24	5.46	6.91	8.13	9.67	10.14	10.53	148.2%
GDP PPP (billion 2005 USD)	13.58	17.49	22.10	26.02	30.96	32.45	33.71	148.2%
Population (millions)	19.08	21.60	24.40	27.28	29.43	29.96	30.49	59.8%
CO ₂ / TPES (tCO ₂ per TJ)	3.7	6.2	9.0	7.9	8.2	9.5	9.3	155.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.21	0.32	0.44	0.37	0.35	0.40	0.39	84.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.07	0.10	0.14	0.12	0.11	0.12	0.12	84.9%
CO ₂ / population (tCO ₂ per capita)	0.05	0.08	0.13	0.11	0.12	0.14	0.13	187.7%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	197	346	343	386	458	459	359.1%
Population	100	113	128	143	154	157	160	59.8%
GDP per population (GDP per capita)	100	114	127	134	148	152	155	55.4%
Energy intensity (TPES/GDP)	100	90	86	82	76	74	72	-27.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	170	247	218	224	260	256	155.8%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	1.13	2.93	-	-	4.06	359.1%
Main activity producer elec. and heat	-	0.00	-	-	0.00	x
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	1.12	0.02	-	-	1.15	472.7%
Transport	-	1.91	-	-	1.91	468.7%
<i>of which: road</i>	-	1.91	-	-	1.91	468.7%
Other	0.00	1.00	-	-	1.00	187.7%
<i>of which: residential</i>	0.00	0.40	-	-	0.41	83.6%
Reference Approach	1.13	2.93	-	-	4.06	344.6%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	0.00	-	-	0.00	-
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	0.28	-	-	0.28	466.7%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	1.91	468.7%	5.9	5.9
Manufacturing industries - coal/peat	1.12	588.6%	3.5	9.3
Non-specified other - oil	0.60	368.7%	1.8	11.2
Residential - oil	0.40	81.5%	1.2	12.4
Manufacturing industries - oil	0.02	-36.7%	0.1	12.5
Residential - coal/peat	0.00	x	0.0	12.5
Main activity prod. elec. and heat - oil	0.00	x	0.0	12.5
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>4.06</i>	<i>359.1%</i>	<i>12.5</i>	<i>12.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Netherlands

Figure 1. CO₂ emissions by fuel

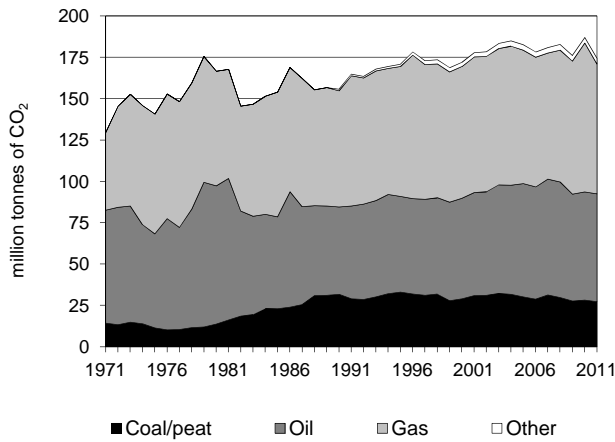


Figure 2. CO₂ emissions by sector

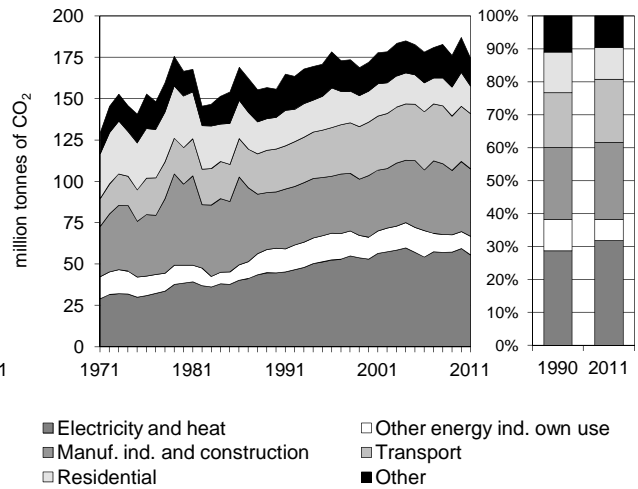


Figure 3. Reference vs Sectoral Approach

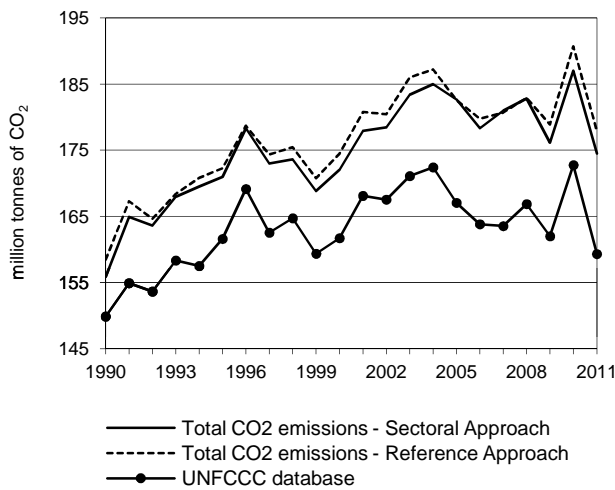


Figure 4. Electricity generation by fuel

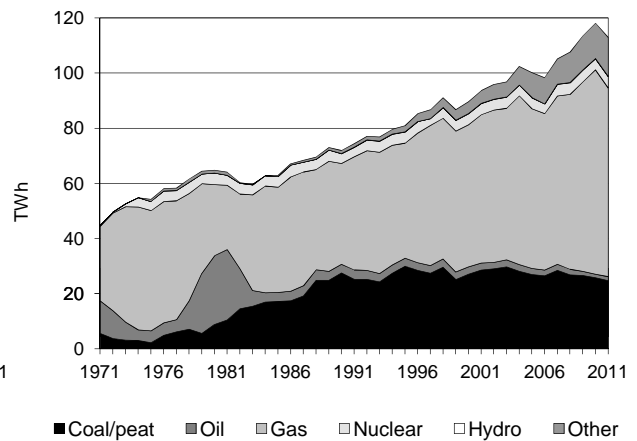


Figure 5. Changes in selected indicators *

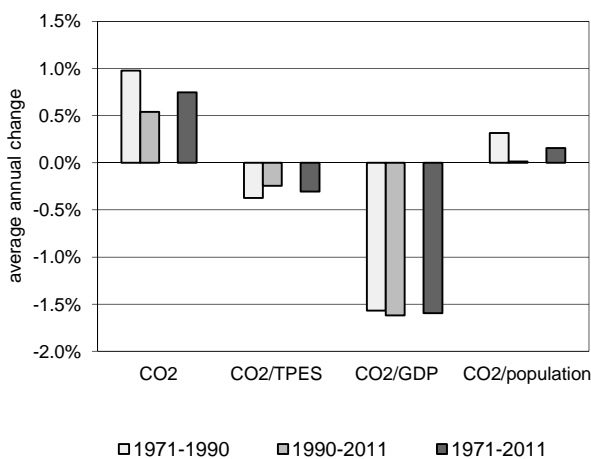
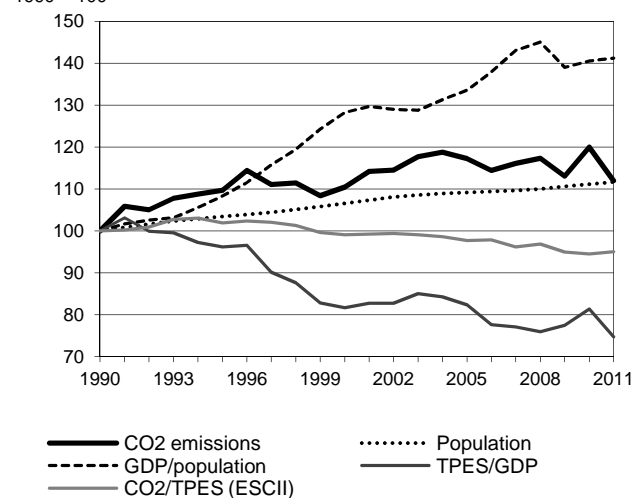


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Netherlands

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	155.85	170.94	172.09	182.66	176.14	187.00	174.47	12.0%
TPES (PJ)	2 750	2 962	3 066	3 300	3 273	3 493	3 241	17.9%
GDP (billion 2005 USD)	437.83	490.39	597.95	638.47	672.79	683.75	690.53	57.7%
GDP PPP (billion 2005 USD)	392.86	440.03	536.54	572.90	603.69	613.53	619.62	57.7%
Population (millions)	14.95	15.46	15.92	16.32	16.53	16.61	16.69	11.7%
CO ₂ / TPES (tCO ₂ per TJ)	56.7	57.7	56.1	55.3	53.8	53.5	53.8	-5.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.36	0.35	0.29	0.29	0.26	0.27	0.25	-29.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.40	0.39	0.32	0.32	0.29	0.30	0.28	-29.0%
CO ₂ / population (tCO ₂ per capita)	10.43	11.06	10.81	11.19	10.66	11.26	10.45	0.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	110	110	117	113	120	112	12.0%
Population	100	103	107	109	111	111	112	11.7%
GDP per population (GDP per capita)	100	108	128	134	139	141	141	41.2%
Energy intensity (TPES/GDP)	100	96	82	82	77	81	75	-25.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	102	99	98	95	94	95	-5.0%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	27.32	65.19	78.50	3.45	174.47	12.0%
Main activity producer elec. and heat	22.82	0.47	23.24	-	46.54	23.4%
Unallocated autoproducers	0.09	0.82	4.63	3.45	8.99	27.1%
Other energy industry own use	0.49	6.34	4.39	-	11.23	-24.1%
Manufacturing industries and construction	3.88	21.84	15.10	-	40.82	19.7%
Transport	-	33.38	0.03	-	33.41	29.2%
<i>of which: road</i>	-	32.48	0.03	-	32.51	31.9%
Other	0.04	2.33	31.10	-	33.48	-7.8%
<i>of which: residential</i>	0.02	0.22	16.43	-	16.66	-13.2%
Reference Approach	28.59	67.58	78.24	3.45	177.87	12.2%
Diff. due to losses and/or transformation	1.27	2.33	-0.26	-	3.33	
Statistical differences	0.00	0.06	-0.00	-	0.06	
<i>Memo: international marine bunkers</i>	-	46.98	-	-	46.98	37.0%
<i>Memo: international aviation bunkers</i>	-	10.39	-	-	10.39	141.9%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	32.48	31.8%	15.5	15.5
Main activity prod. elec. and heat - gas	23.24	79.4%	11.1	26.6
Main activity prod. elec. and heat - coal/peat	22.82	-7.2%	10.9	37.5
Manufacturing industries - oil	21.84	133.6%	10.4	47.9
Residential - gas	16.43	-10.6%	7.8	55.8
Manufacturing industries - gas	15.10	-19.6%	7.2	63.0
Non-specified other - gas	14.68	4.2%	7.0	70.0
Other energy industry own use - oil	6.34	-45.8%	3.0	73.0
Unallocated autoproducers - gas	4.63	26.8%	2.2	75.2
<i>Memo: total CO₂ from fuel combustion</i>	<i>174.47</i>	<i>12.0%</i>	<i>83.3</i>	<i>83.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Netherlands Antilles

Figure 1. CO₂ emissions by fuel

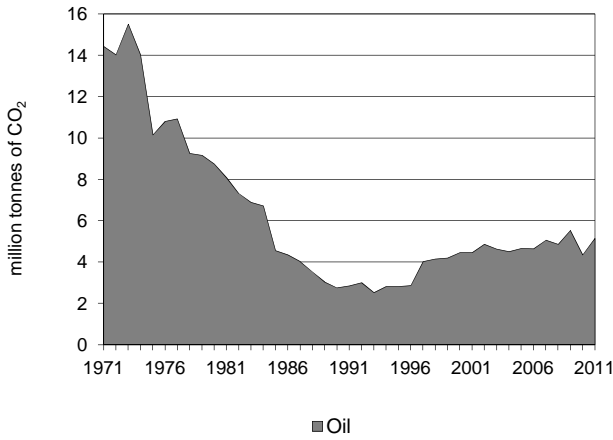


Figure 2. CO₂ emissions by sector

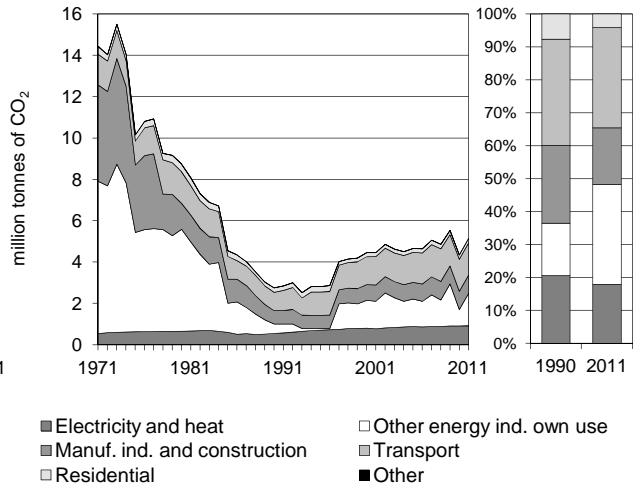


Figure 3. Reference vs Sectoral Approach

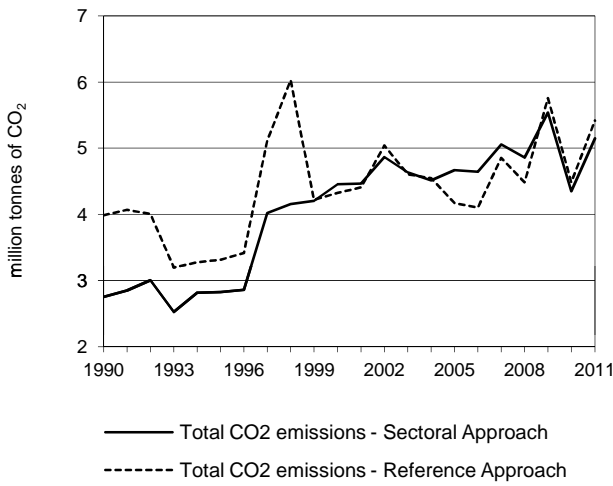


Figure 4. Electricity generation by fuel

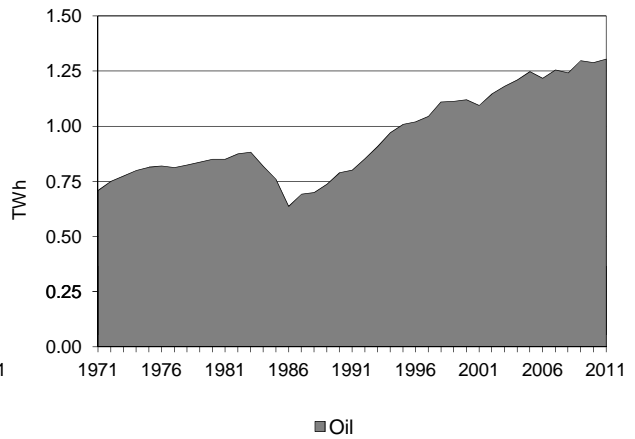


Figure 5. Changes in selected indicators *

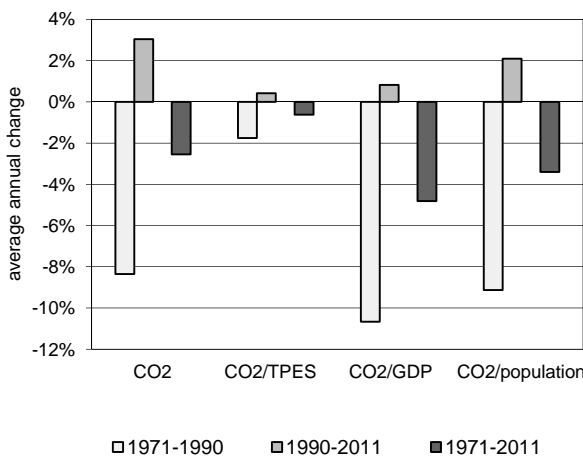
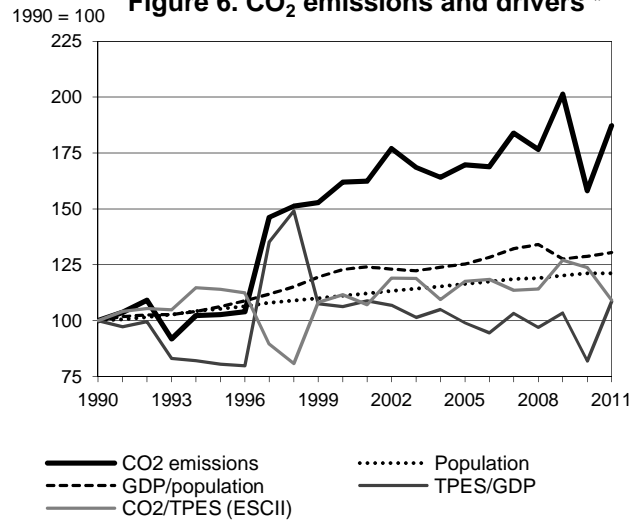


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Netherlands Antilles

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2.75	2.82	4.45	4.67	5.54	4.35	5.15	87.1%
TPES (PJ)	61	55	89	88	97	78	105	71.5%
GDP (billion 2005 USD)	1.72	1.92	2.34	2.50	2.63	2.68	2.71	58.0%
GDP PPP (billion 2005 USD)	1.54	1.72	2.10	2.24	2.36	2.40	2.43	58.0%
Population (millions)	0.19	0.20	0.21	0.22	0.23	0.23	0.23	21.2%
CO ₂ / TPES (tCO ₂ per TJ)	45.0	51.4	50.3	53.0	57.2	55.7	49.2	9.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.60	1.47	1.90	1.87	2.10	1.62	1.90	18.4%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.79	1.64	2.12	2.08	2.35	1.81	2.12	18.4%
CO ₂ / population (tCO ₂ per capita)	14.55	14.19	21.21	21.22	24.39	18.99	22.48	54.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	103	162	170	201	158	187	87.1%
Population	100	105	111	116	120	121	121	21.2%
GDP per population (GDP per capita)	100	106	123	125	128	129	130	30.4%
Energy intensity (TPES/GDP)	100	80	106	99	103	82	109	8.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	114	112	118	127	124	109	9.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	5.15	-	-	5.15	87.1%
Main activity producer elec. and heat	-	0.46	-	-	0.46	64.4%
Unallocated autoproducers	-	0.47	-	-	0.47	61.7%
Other energy industry own use	-	1.56	-	-	1.56	256.6%
Manufacturing industries and construction	-	0.89	-	-	0.89	36.6%
Transport	-	1.57	-	-	1.57	76.5%
<i>of which: road</i>	-	1.57	-	-	1.57	76.5%
Other	-	0.21	-	-	0.21	0.9%
<i>of which: residential</i>	-	0.21	-	-	0.21	0.9%
Reference Approach	-	5.42	-	-	5.42	35.9%
Diff. due to losses and/or transformation	-	0.27	-	-	0.27	
Statistical differences	-	0.00	-	-	0.00	
<i>Memo: international marine bunkers</i>	-	7.27	-	-	7.27	40.5%
<i>Memo: international aviation bunkers</i>	-	0.28	-	-	0.28	137.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	1.57	76.5%	29.3	29.3
Other energy industry own use - oil	1.56	256.6%	29.2	58.6
Manufacturing industries - oil	0.89	36.6%	16.6	75.2
Unallocated autoproducers - oil	0.47	61.7%	8.8	84.0
Main activity prod. elec. and heat - oil	0.46	64.4%	8.5	92.5
Residential - oil	0.21	0.9%	4.0	96.5
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>5.15</i>	<i>87.1%</i>	<i>96.5</i>	<i>96.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

New Zealand

Figure 1. CO₂ emissions by fuel

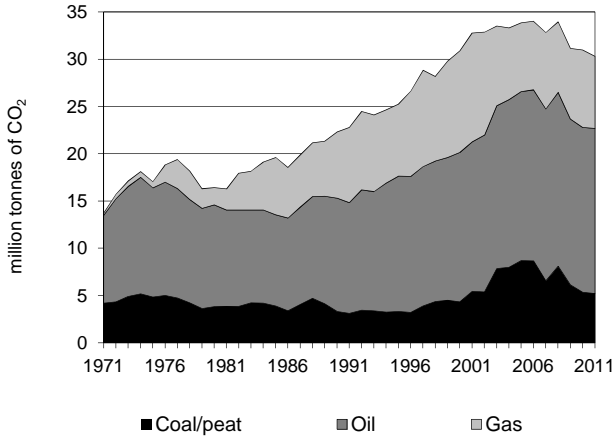


Figure 2. CO₂ emissions by sector

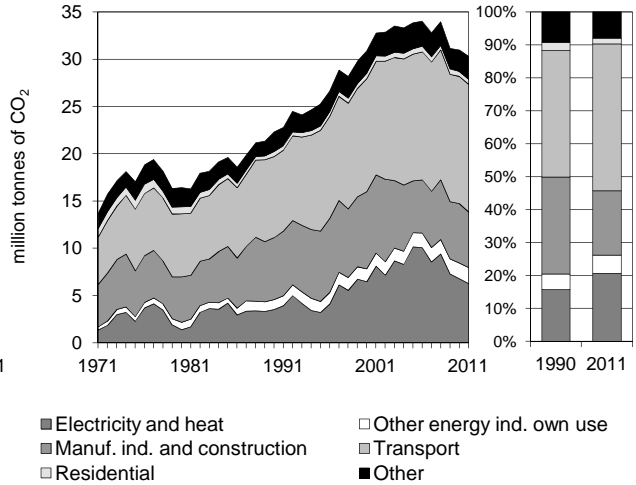


Figure 3. Reference vs Sectoral Approach

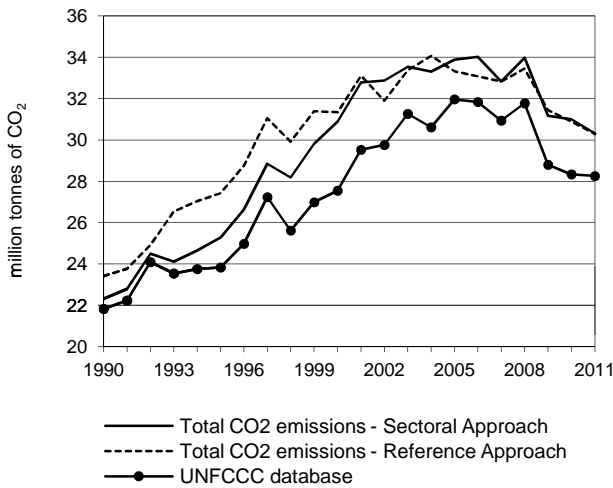


Figure 4. Electricity generation by fuel

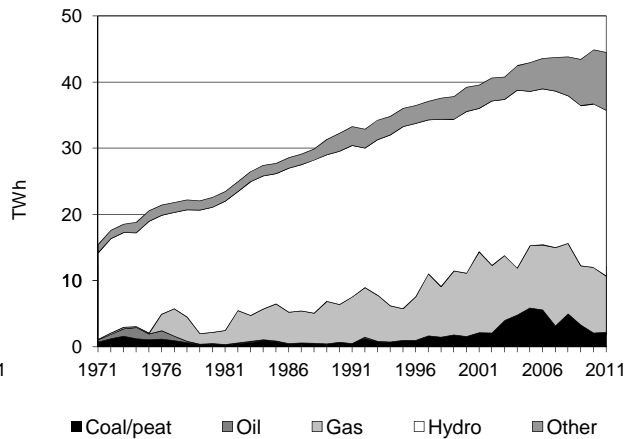


Figure 5. Changes in selected indicators *

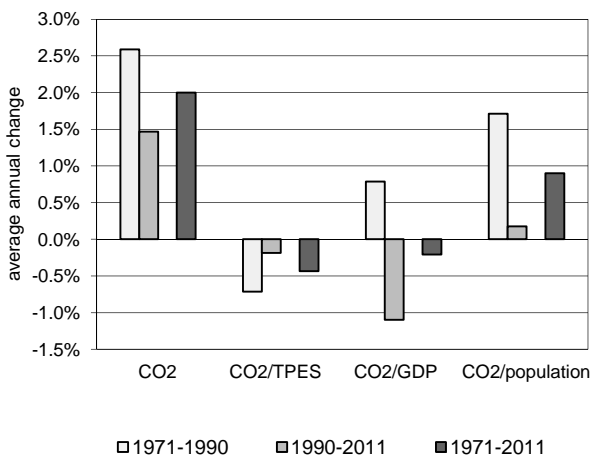
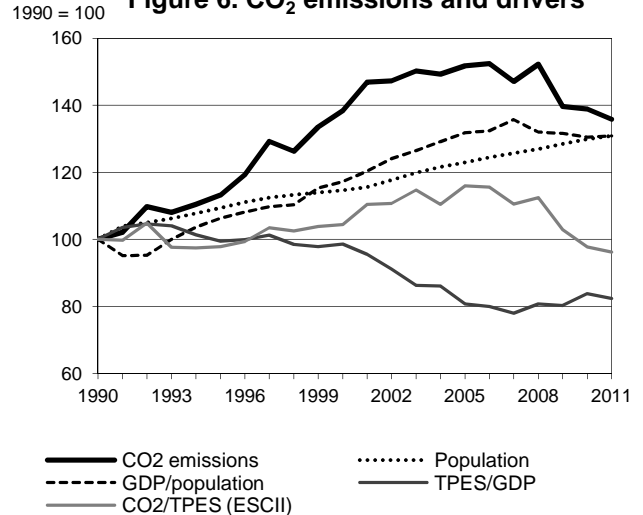


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

New Zealand

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	22.32	25.27	30.90	33.88	31.17	31.00	30.31	35.8%
TPES (PJ)	539	623	714	705	731	766	761	41.2%
GDP (billion 2005 USD)	69.78	81.19	93.77	113.07	117.98	118.26	119.53	71.3%
GDP PPP (billion 2005 USD)	64.56	75.12	86.76	104.62	109.16	109.42	110.60	71.3%
Population (millions)	3.37	3.69	3.87	4.15	4.33	4.38	4.42	30.9%
CO ₂ / TPES (tCO ₂ per TJ)	41.4	40.5	43.3	48.0	42.6	40.5	39.9	-3.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.32	0.31	0.33	0.30	0.26	0.26	0.25	-20.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.35	0.34	0.36	0.32	0.29	0.28	0.27	-20.7%
CO ₂ / population (tCO ₂ per capita)	6.62	6.85	7.99	8.17	7.19	7.08	6.87	3.8%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	113	138	152	140	139	136	35.8%
Population	100	109	115	123	128	130	131	30.9%
GDP per population (GDP per capita)	100	106	117	132	132	130	131	30.9%
Energy intensity (TPES/GDP)	100	99	99	81	80	84	82	-17.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	98	104	116	103	98	96	-3.8%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	5.20	17.49	7.62	-	30.31	35.8%
Main activity producer elec. and heat	1.46	-	3.46	-	4.92	47.3%
Unallocated autoproducers	1.27	-	0.07	-	1.34	668.1%
Other energy industry own use	0.16	1.01	0.52	-	1.70	59.4%
Manufacturing industries and construction	1.88	1.11	2.92	-	5.91	-9.8%
Transport	0.00	13.50	0.00	-	13.50	57.5%
<i>of which: road</i>	-	12.04	0.00	-	12.04	64.0%
Other	0.43	1.87	0.65	-	2.95	12.9%
<i>of which: residential</i>	0.07	0.19	0.29	-	0.55	-0.8%
Reference Approach	5.68	17.05	7.56	-	30.30	29.3%
Diff. due to losses and/or transformation	-0.00	0.08	0.04	-	0.12	
Statistical differences	0.48	-0.51	-0.10	-	-0.14	
<i>Memo: international marine bunkers</i>	0.00	1.00	-	-	1.01	-3.3%
<i>Memo: international aviation bunkers</i>	-	2.33	-	-	2.33	76.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	12.04	67.0%	16.1	16.1
Main activity prod. elec. and heat - gas	3.46	20.9%	4.6	20.7
Manufacturing industries - gas	2.92	-12.5%	3.9	24.6
Manufacturing industries - coal/peat	1.88	-11.5%	2.5	27.1
Non-specified other - oil	1.68	6.9%	2.2	29.3
Main activity prod. elec. and heat - coal/peat	1.46	217.3%	1.9	31.3
Other transport - oil	1.46	18.8%	1.9	33.2
Unallocated autoproducers - coal/peat	1.27	818.7%	1.7	34.9
Manufacturing industries - oil	1.11	1.4%	1.5	36.4
<i>Memo: total CO₂ from fuel combustion</i>	30.31	35.8%	40.5	40.5

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Nicaragua

Figure 1. CO₂ emissions by fuel

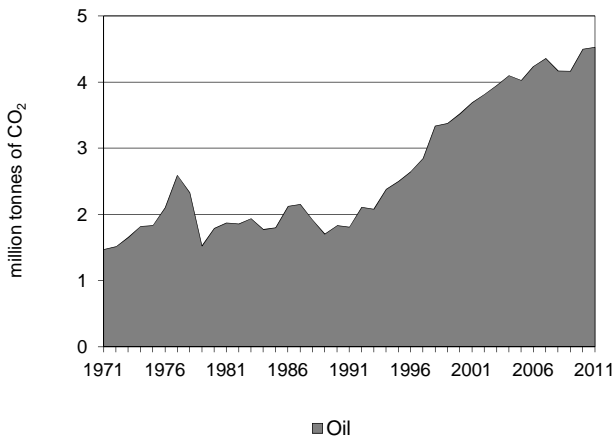


Figure 2. CO₂ emissions by sector

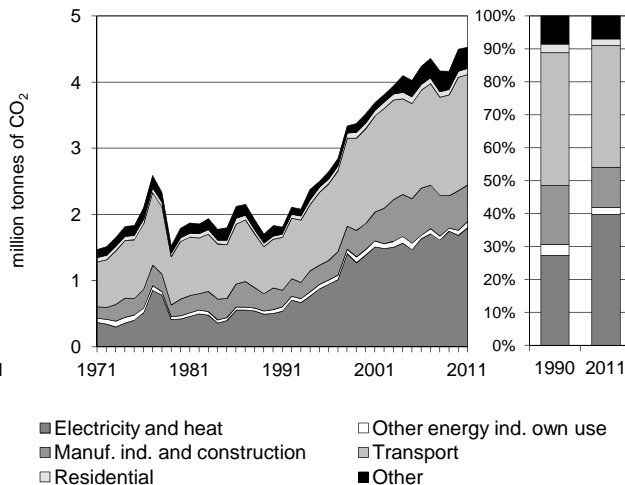


Figure 3. Reference vs Sectoral Approach

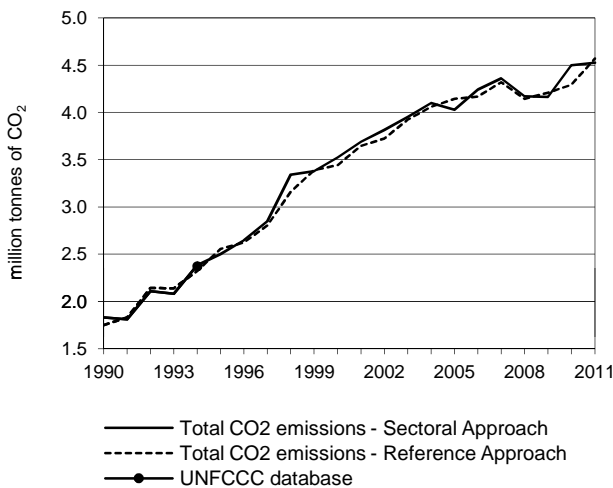


Figure 4. Electricity generation by fuel

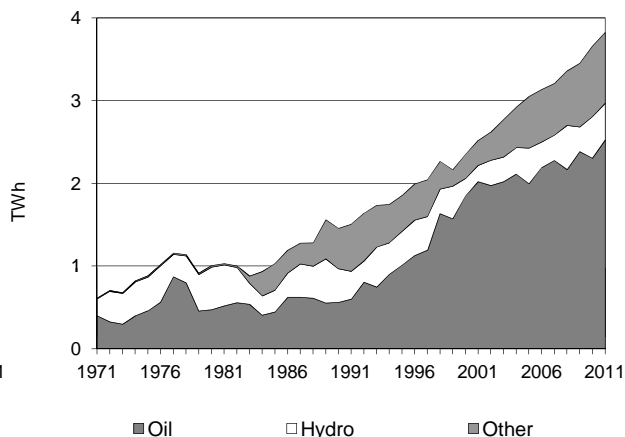


Figure 5. Changes in selected indicators *

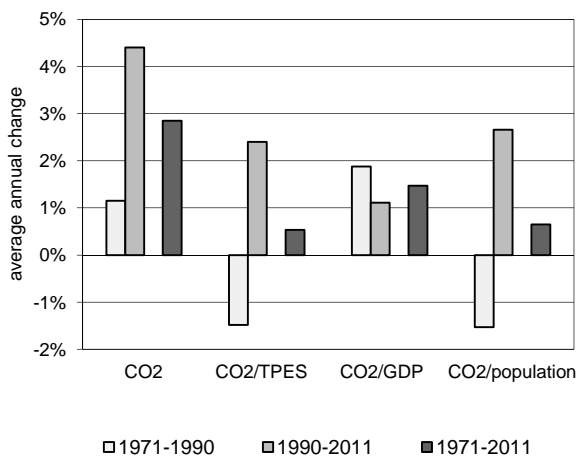
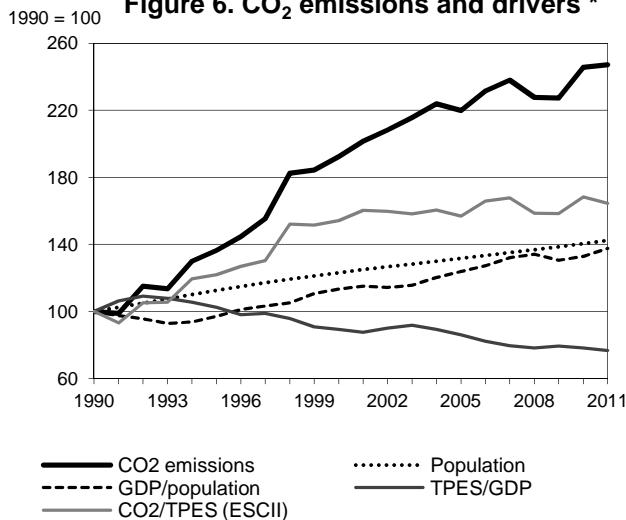


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Nicaragua

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	1.83	2.50	3.52	4.03	4.17	4.50	4.53	147.1%
TPES (PJ)	85	95	106	119	122	124	127	50.2%
GDP (billion 2005 USD)	3.88	4.24	5.41	6.32	7.01	7.23	7.60	95.9%
GDP PPP (billion 2005 USD)	10.08	11.02	14.07	16.44	18.24	18.81	19.76	95.9%
Population (millions)	4.12	4.64	5.07	5.42	5.71	5.79	5.87	42.4%
CO ₂ / TPES (tCO ₂ per TJ)	21.6	26.4	33.4	33.9	34.3	36.4	35.6	64.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.47	0.59	0.65	0.64	0.59	0.62	0.60	26.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.18	0.23	0.25	0.25	0.23	0.24	0.23	26.1%
CO ₂ / population (tCO ₂ per capita)	0.44	0.54	0.69	0.74	0.73	0.78	0.77	73.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	137	192	220	227	246	247	147.1%
Population	100	113	123	132	139	140	142	42.4%
GDP per population (GDP per capita)	100	97	113	124	131	133	138	37.5%
Energy intensity (TPES/GDP)	100	102	89	86	79	78	77	-23.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	122	154	157	158	168	165	64.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	4.53	-	-	4.53	147.1%
Main activity producer elec. and heat	-	1.76	-	-	1.76	263.8%
Unallocated autoproducers	-	0.04	-	-	0.04	118.5%
Other energy industry own use	-	0.09	-	-	0.09	60.4%
Manufacturing industries and construction	-	0.55	-	-	0.55	68.3%
Transport	-	1.67	-	-	1.67	126.8%
<i>of which: road</i>	-	1.67	-	-	1.67	139.1%
Other	-	0.41	-	-	0.41	98.7%
<i>of which: residential</i>	-	0.09	-	-	0.09	87.3%
Reference Approach	-	4.57	-	-	4.57	161.5%
Diff. due to losses and/or transformation	-	-0.03	-	-	-0.03	
Statistical differences	-	0.08	-	-	0.08	
<i>Memo: international marine bunkers</i>	-	..	-	-
<i>Memo: international aviation bunkers</i>	-	0.06	-	-	0.06	-26.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - oil	1.76	263.8%	12.0	12.0
Road - oil	1.67	139.1%	11.4	23.4
Manufacturing industries - oil	0.55	68.3%	3.8	27.2
Non-specified other - oil	0.32	102.3%	2.2	29.3
Other energy industry own use - oil	0.09	60.4%	0.6	30.0
Residential - oil	0.09	87.3%	0.6	30.6
Unallocated autoproducers - oil	0.04	118.5%	0.3	30.9
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	4.53	147.1%	30.9	30.9

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Nigeria

Figure 1. CO₂ emissions by fuel

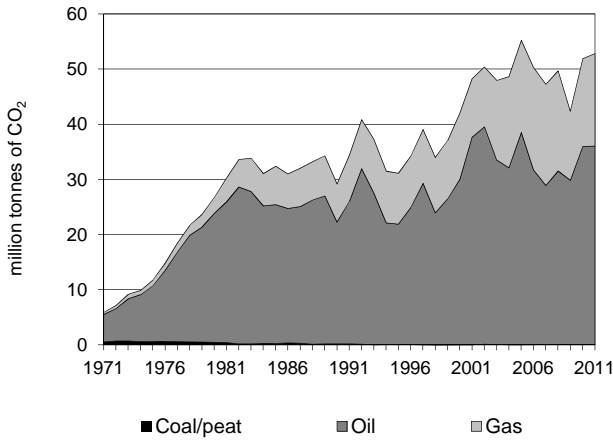


Figure 2. CO₂ emissions by sector

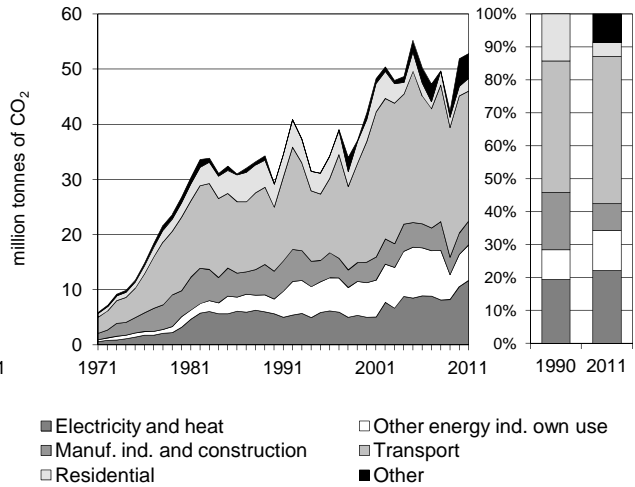


Figure 3. Reference vs Sectoral Approach

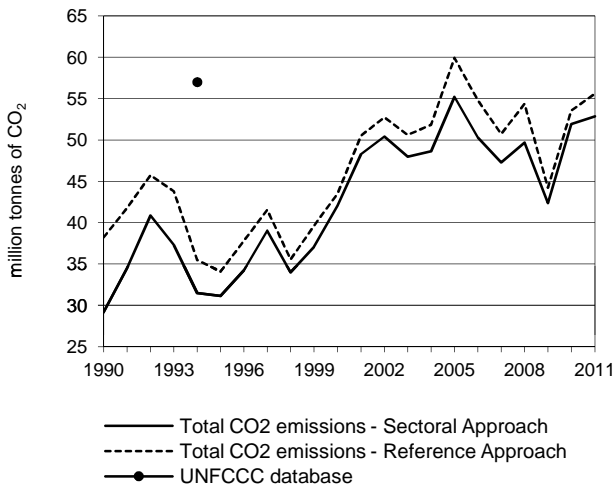


Figure 4. Electricity generation by fuel

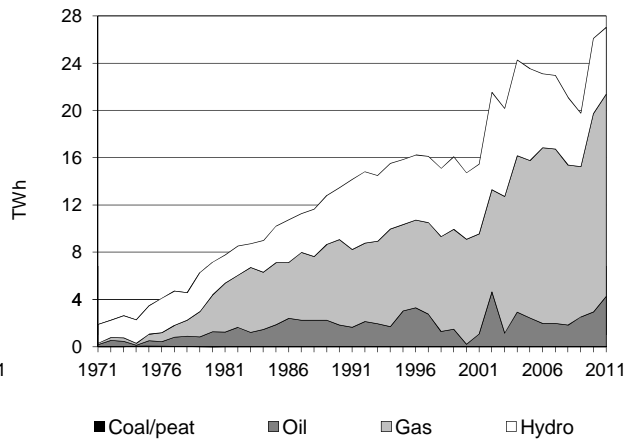


Figure 5. Changes in selected indicators *

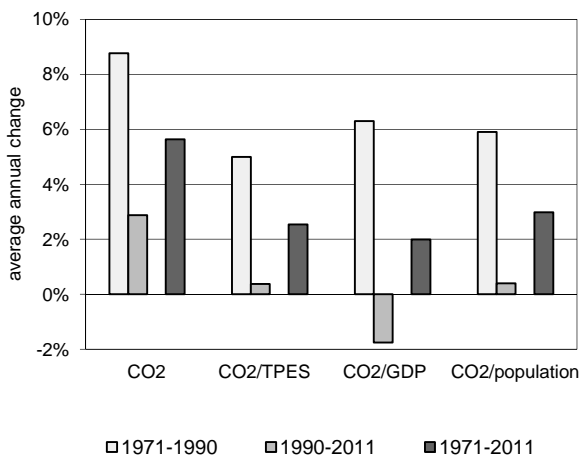
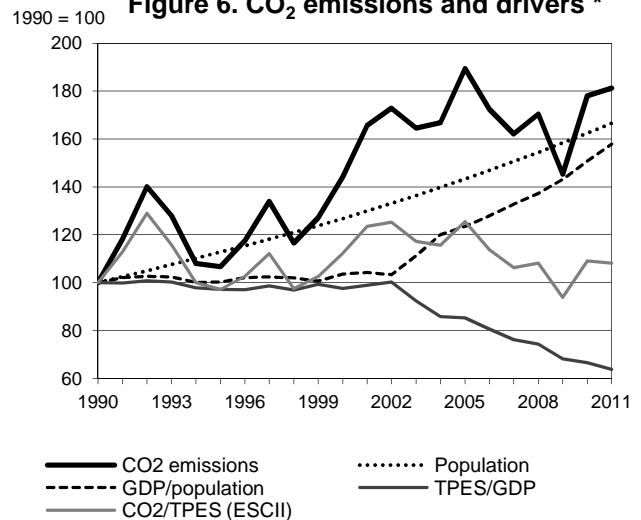


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Nigeria

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	29.16	31.12	42.05	55.23	42.37	51.91	52.85	81.3%
TPES (PJ)	2 955	3 246	3 793	4 459	4 574	4 821	4 954	67.6%
GDP (billion 2005 USD)	63.43	71.70	83.38	112.25	143.85	155.32	166.75	162.9%
GDP PPP (billion 2005 USD)	138.23	156.28	181.73	244.64	313.52	338.52	363.42	162.9%
Population (millions)	97.55	110.02	123.69	139.82	154.49	158.42	162.47	66.5%
CO ₂ / TPES (tCO ₂ per TJ)	9.9	9.6	11.1	12.4	9.3	10.8	10.7	8.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.46	0.43	0.50	0.49	0.29	0.33	0.32	-31.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.21	0.20	0.23	0.23	0.14	0.15	0.15	-31.1%
CO ₂ / population (tCO ₂ per capita)	0.30	0.28	0.34	0.40	0.27	0.33	0.33	8.8%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	107	144	189	145	178	181	81.3%
Population	100	113	127	143	158	162	167	66.5%
GDP per population (GDP per capita)	100	100	104	123	143	151	158	57.9%
Energy intensity (TPES/GDP)	100	97	98	85	68	67	64	-36.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	97	112	126	94	109	108	8.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach ***	0.08	35.98	16.79	-	52.85	81.3%
Main activity producer elec. and heat	-	3.10	8.59	-	11.69	106.6%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	1.38	5.04	-	6.42	142.6%
Manufacturing industries and construction	0.08	1.08	3.16	-	4.32	-14.4%
Transport	-	23.58	-	-	23.58	102.6%
<i>of which: road</i>	-	23.54	-	-	23.54	106.2%
Other	-	6.83	-	-	6.83	64.0%
<i>of which: residential</i>	-	2.33	-	-	2.33	-44.0%
Reference Approach ***	0.08	36.75	18.76	-	55.59	45.4%
Diff. due to losses and/or transformation	-	0.77	1.97	-	2.74	
Statistical differences	-	0.00	-	-	0.00	
<i>Memo: international marine bunkers</i>	-	2.30	-	-	2.30	295.2%
<i>Memo: international aviation bunkers</i>	-	0.57	-	-	0.57	-39.7%

** Other includes industrial waste and non-renewable municipal waste.

*** The difference in the growth rate between the Sectoral and Reference Approaches is mainly due to statistical differences for some oil products in 1990.'

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ****	Cumulative total (%)
Road - oil	23.54	106.2%	11.1	11.1
Main activity prod. elec. and heat - gas	8.59	103.7%	4.1	15.2
Other energy industry own use - gas	5.04	410.1%	2.4	17.5
Non-specified other - oil	4.50	x	2.1	19.7
Manufacturing industries - gas	3.16	88.6%	1.5	21.1
Main activity prod. elec. and heat - oil	3.10	118.2%	1.5	22.6
Residential - oil	2.33	-44.0%	1.1	23.7
Other energy industry own use - oil	1.38	-16.7%	0.7	24.4
Manufacturing industries - oil	1.08	-66.3%	0.5	24.9
<i>Memo: total CO₂ from fuel combustion</i>	<i>52.85</i>	<i>81.3%</i>	<i>24.9</i>	<i>24.9</i>

**** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Norway *

Figure 1. CO₂ emissions by fuel

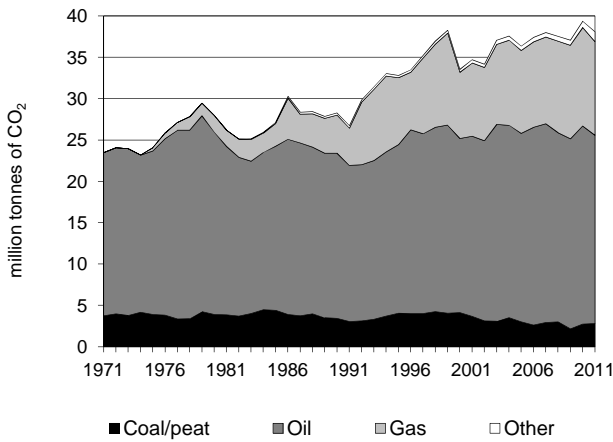


Figure 2. CO₂ emissions by sector

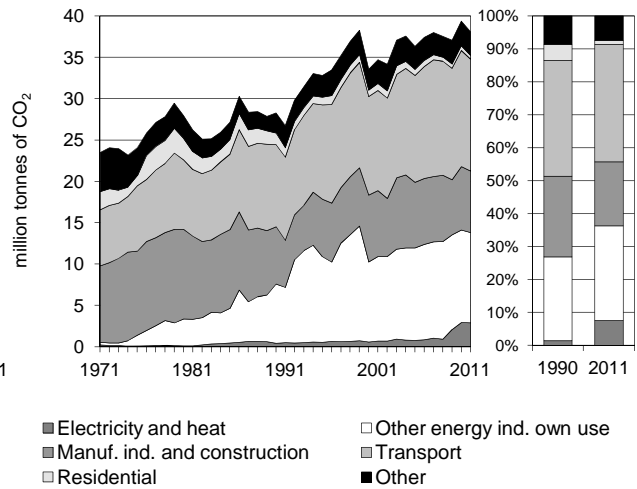


Figure 3. Reference vs Sectoral Approach

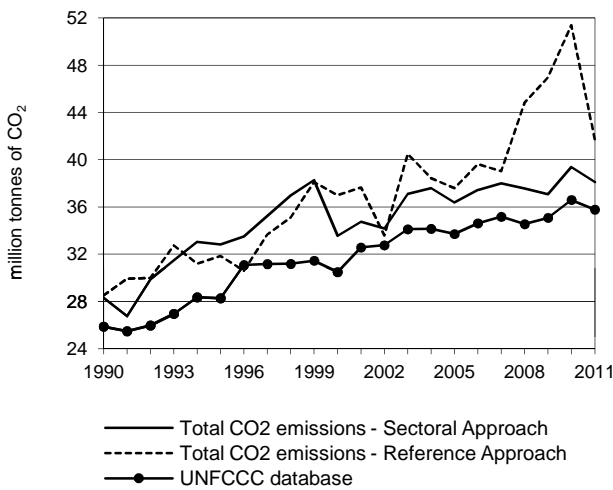


Figure 4. Electricity generation by fuel

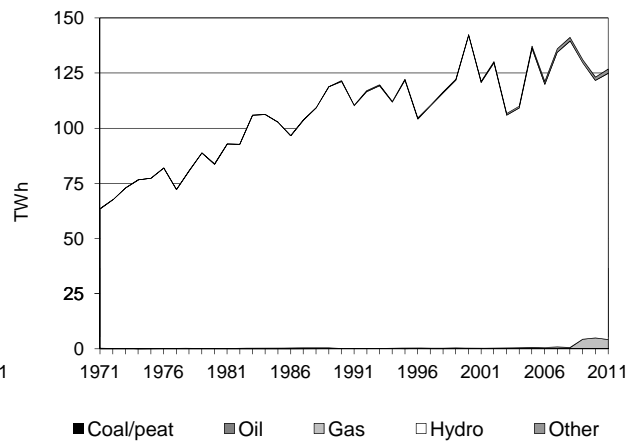


Figure 5. Changes in selected indicators **

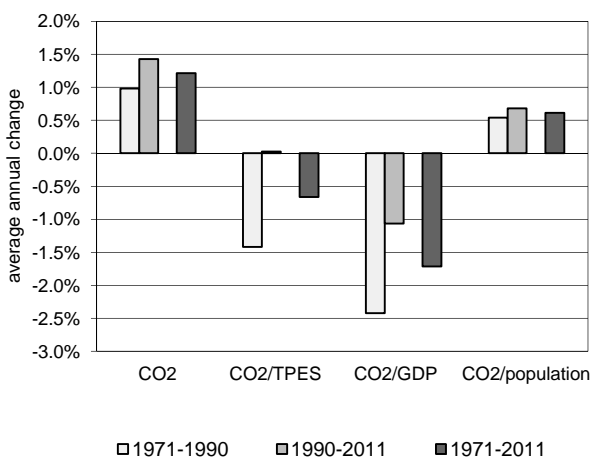
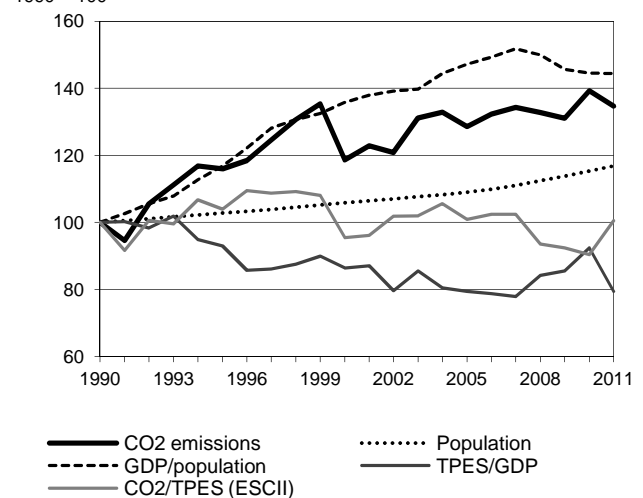


Figure 6. CO₂ emissions and drivers **



* Large statistical differences for oil and gas cause discrepancies between the Sectoral and Reference Approaches; please see the note in Chapter 1.

** Based on GDP in 2005 USD, using purchasing power parities.

Norway

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	28.29	32.81	33.56	36.36	37.07	39.38	38.10	34.7%
TPES (PJ)	879	981	1 092	1 121	1 247	1 354	1 178	34.0%
GDP (billion 2005 USD)	189.55	227.61	272.72	304.06	314.29	315.80	319.64	68.6%
GDP PPP (billion 2005 USD)	137.27	164.83	197.49	220.19	227.60	228.69	231.47	68.6%
Population (millions)	4.24	4.36	4.49	4.62	4.83	4.89	4.95	16.8%
CO ₂ / TPES (tCO ₂ per TJ)	32.2	33.4	30.7	32.4	29.7	29.1	32.3	0.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.15	0.14	0.12	0.12	0.12	0.12	0.12	-20.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.21	0.20	0.17	0.17	0.16	0.17	0.16	-20.1%
CO ₂ / population (tCO ₂ per capita)	6.67	7.53	7.47	7.87	7.68	8.06	7.69	15.3%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	116	119	129	131	139	135	34.7%
Population	100	103	106	109	114	115	117	16.8%
GDP per population (GDP per capita)	100	117	136	147	146	145	144	44.4%
Energy intensity (TPES/GDP)	100	93	86	79	86	92	79	-20.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	104	95	101	92	90	101	0.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach ***	2.84	22.74	11.33	1.19	38.10	34.7%
Main activity producer elec. and heat	0.17	0.15	0.04	1.08	1.44	240.4%
Unallocated autoproducers	-	0.01	1.45	0.01	1.47	x
Other energy industry own use	-	2.68	8.25	-	10.93	52.2%
Manufacturing industries and construction	2.66	3.30	1.35	0.10	7.41	7.0%
Transport	-	13.41	0.15	-	13.56	36.5%
<i>of which: road</i>	-	9.83	0.01	-	9.84	29.4%
Other	0.01	3.18	0.10	-	3.29	-14.0%
<i>of which: residential</i>	-	0.45	0.01	-	0.46	-67.2%
Reference Approach ***	3.46	25.86	11.15	1.19	41.66	46.1%
Diff. due to losses and/or transformation	0.20	- 1.88	-	-	- 1.68	
Statistical differences	0.42	5.00	- 0.18	-	5.24	
<i>Memo: international marine bunkers</i>	-	1.18	-	-	1.18	-15.3%
<i>Memo: international aviation bunkers</i>	-	1.26	-	-	1.26	1.0%

** Other includes industrial waste and non-renewable municipal waste.

*** Large statistical differences for oil and gas cause discrepancies between the Sectoral and Reference Approaches; please see note in Chapter 1.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ****	Cumulative total (%)
Road - oil	9.83	29.3%	17.6	17.6
Other energy industry own use - gas	8.25	78.6%	14.8	32.5
Other transport - oil	3.58	53.8%	6.4	38.9
Manufacturing industries - oil	3.30	-9.9%	5.9	44.8
Non-specified other - oil	2.74	12.8%	4.9	49.7
Other energy industry own use - oil	2.68	4.8%	4.8	54.6
Manufacturing industries - coal/peat	2.66	-18.3%	4.8	59.3
Unallocated autoproducers - gas	1.45	x	2.6	61.9
Manufacturing industries - gas	1.35	x	2.4	64.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>38.10</i>	<i>34.7%</i>	<i>68.4</i>	<i>68.4</i>

**** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Oman

Figure 1. CO₂ emissions by fuel

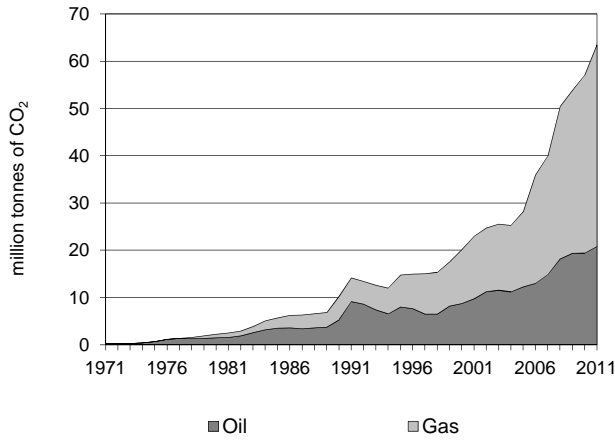


Figure 2. CO₂ emissions by sector

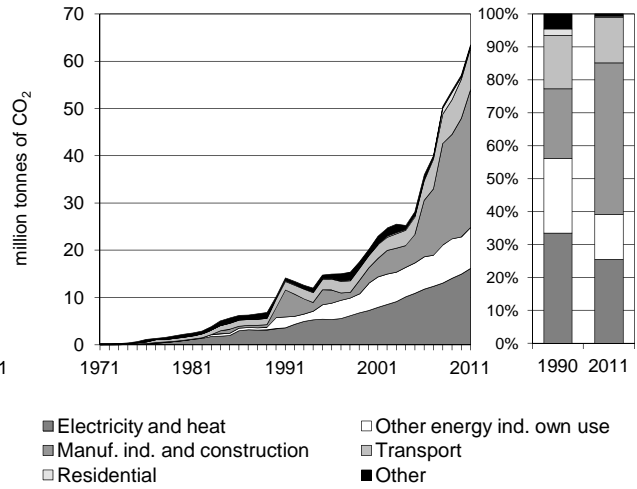


Figure 3. Reference vs Sectoral Approach

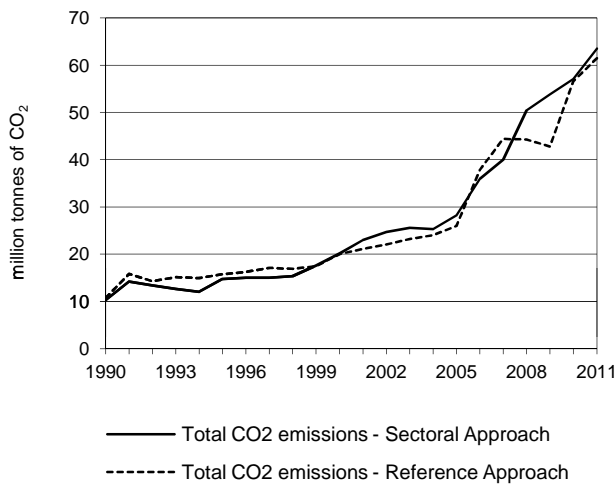


Figure 4. Electricity generation by fuel

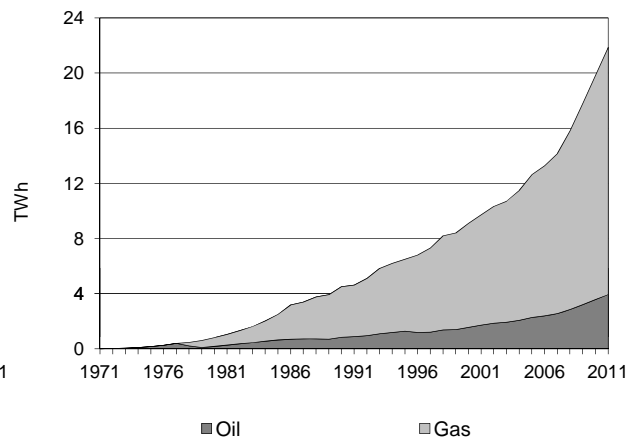


Figure 5. Changes in selected indicators *

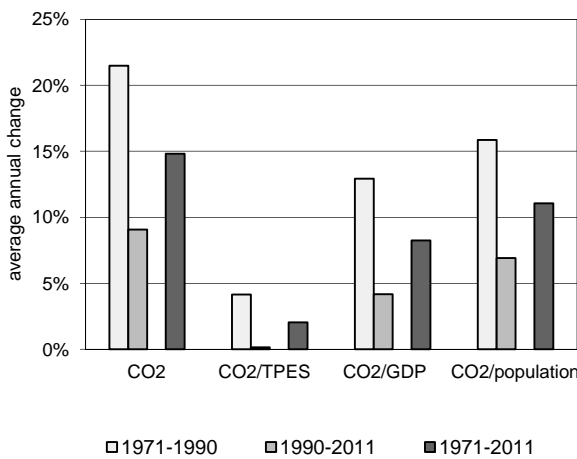
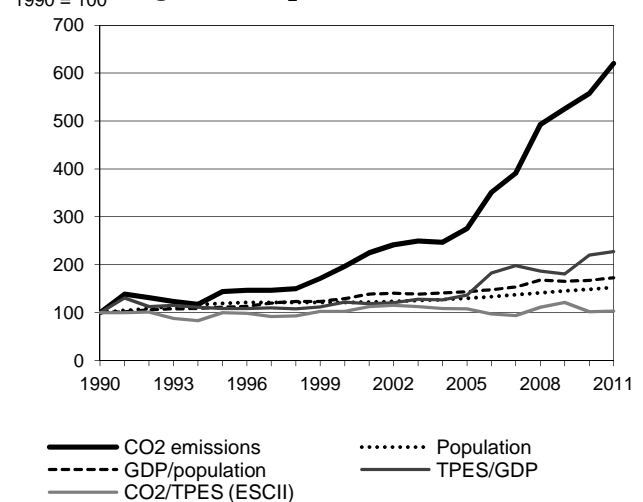


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Oman

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	10.23	14.75	20.16	28.23	53.80	57.05	63.48	520.2%
TPES (PJ)	177	255	338	451	765	970	1 058	499.2%
GDP (billion 2005 USD)	16.55	22.02	25.99	30.91	39.71	41.29	43.55	163.1%
GDP PPP (billion 2005 USD)	27.39	36.43	43.01	51.14	65.71	68.32	72.06	163.1%
Population (millions)	1.87	2.23	2.26	2.43	2.71	2.78	2.85	52.4%
CO ₂ / TPES (tCO ₂ per TJ)	58.0	57.8	59.6	62.6	70.3	58.8	60.0	3.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.62	0.67	0.78	0.91	1.35	1.38	1.46	135.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.37	0.40	0.47	0.55	0.82	0.84	0.88	135.7%
CO ₂ / population (tCO ₂ per capita)	5.48	6.61	8.90	11.62	19.84	20.51	22.31	307.1%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	144	197	276	526	557	620	520.2%
Population	100	119	121	130	145	149	152	52.4%
GDP per population (GDP per capita)	100	111	130	144	165	167	173	72.7%
Energy intensity (TPES/GDP)	100	109	122	137	181	220	228	127.8%
Carbon intensity: ESCII (CO ₂ /TPES)	100	100	103	108	121	102	104	3.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	20.83	42.65	-	63.48	520.2%
Main activity producer elec. and heat	-	3.18	13.03	-	16.21	372.6%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	2.35	6.27	-	8.62	272.2%
Manufacturing industries and construction	-	6.25	22.94	-	29.19	+
Transport	-	8.76	-	-	8.76	425.8%
<i>of which: road</i>	-	8.76	-	-	8.76	425.8%
Other	-	0.29	0.40	-	0.69	4.3%
<i>of which: residential</i>	-	0.29	-	-	0.29	48.5%
Reference Approach	-	20.35	41.12	-	61.47	471.4%
Diff. due to losses and/or transformation	-	1.38	-	-	1.38	
Statistical differences	-	- 1.87	- 1.52	-	- 3.39	
<i>Memo: international marine bunkers</i>	-	0.45	-	-	0.45	635.0%
<i>Memo: international aviation bunkers</i>	-	1.18	-	-	1.18	26.7%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Manufacturing industries - gas	22.94	+	26.3	26.3
Main activity prod. elec. and heat - gas	13.03	409.4%	14.9	41.2
Road - oil	8.76	425.8%	10.0	51.2
Other energy industry own use - gas	6.27	290.8%	7.2	58.4
Manufacturing industries - oil	6.25	298.8%	7.2	65.5
Main activity prod. elec. and heat - oil	3.18	264.7%	3.6	69.2
Other energy industry own use - oil	2.35	230.1%	2.7	71.9
Non-specified other - gas	0.40	146.7%	0.5	72.3
Residential - oil	0.29	48.5%	0.3	72.6
<i>Memo: total CO₂ from fuel combustion</i>	63.48	520.2%	72.6	72.6

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Pakistan

Figure 1. CO₂ emissions by fuel

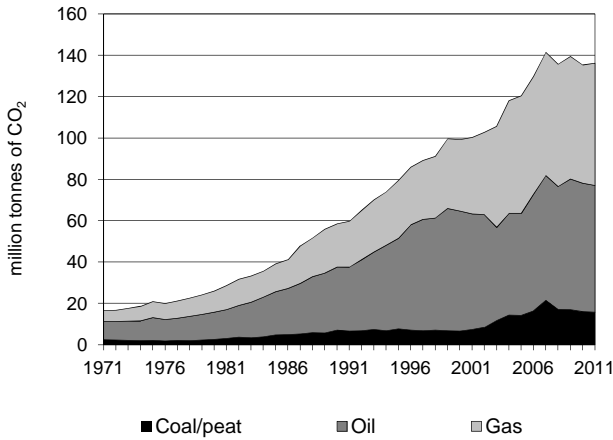


Figure 2. CO₂ emissions by sector

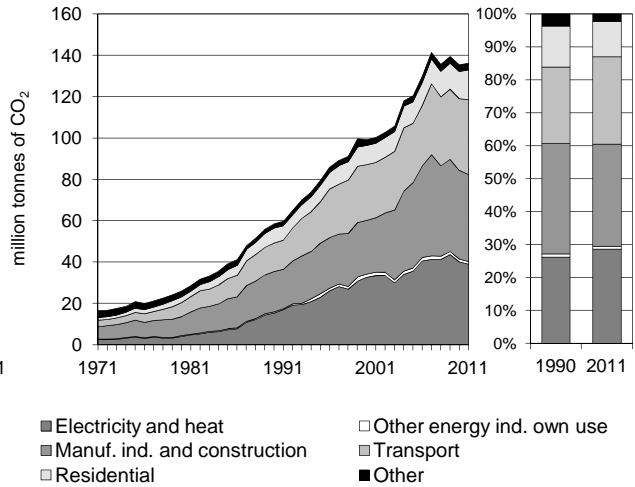


Figure 3. Reference vs Sectoral Approach

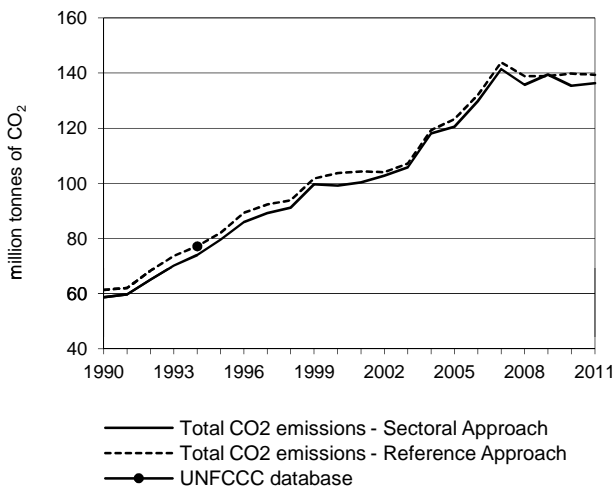


Figure 4. Electricity generation by fuel

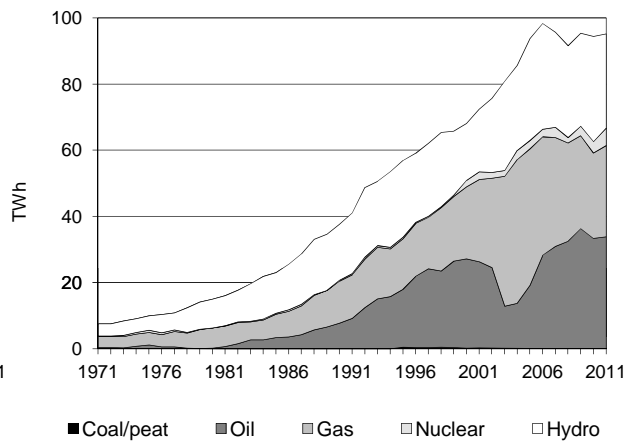


Figure 5. Changes in selected indicators *

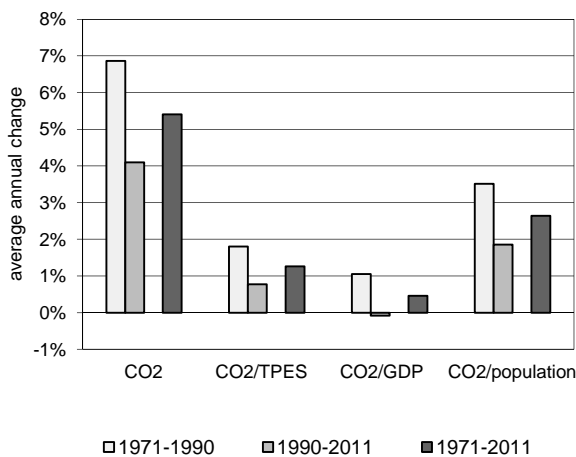
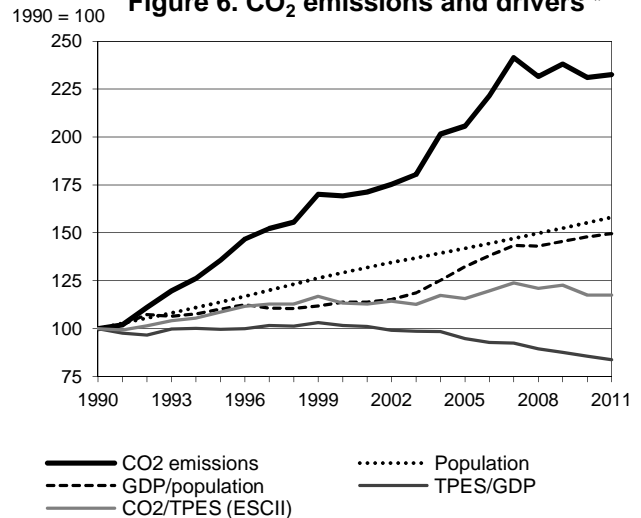


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Pakistan

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	58.60	79.52	99.21	120.49	139.49	135.39	136.28	132.6%
TPES (PJ)	1 794	2 242	2 682	3 191	3 483	3 530	3 552	98.0%
GDP (billion 2005 USD)	58.37	73.18	85.90	109.60	129.44	134.03	137.99	136.4%
GDP PPP (billion 2005 USD)	181.20	227.19	266.68	340.26	401.85	416.11	428.41	136.4%
Population (millions)	111.85	127.35	144.52	158.65	170.49	173.59	176.75	58.0%
CO ₂ / TPES (tCO ₂ per TJ)	32.7	35.5	37.0	37.8	40.0	38.4	38.4	17.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.00	1.09	1.16	1.10	1.08	1.01	0.99	-1.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.32	0.35	0.37	0.35	0.35	0.33	0.32	-1.6%
CO ₂ / population (tCO ₂ per capita)	0.52	0.62	0.69	0.76	0.82	0.78	0.77	47.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	136	169	206	238	231	233	132.6%
Population	100	114	129	142	152	155	158	58.0%
GDP per population (GDP per capita)	100	110	114	132	145	148	150	49.6%
Energy intensity (TPES/GDP)	100	100	102	95	88	86	84	-16.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	109	113	116	123	117	117	17.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	15.80	61.29	59.18	-	136.28	132.6%
Main activity producer elec. and heat	0.24	23.66	14.95	-	38.84	152.9%
Unallocated autoproducers	-	0.13	-	-	0.13	x
Other energy industry own use	-	0.80	0.43	-	1.23	116.8%
Manufacturing industries and construction	15.57	4.69	21.96	-	42.21	115.3%
Transport	-	29.97	6.18	-	36.15	165.0%
<i>of which: road</i>	-	27.29	6.18	-	33.47	162.3%
Other	-	2.05	15.66	-	17.71	88.0%
<i>of which: residential</i>	-	0.90	13.61	-	14.51	99.1%
Reference Approach	15.96	62.67	60.66	-	139.29	127.1%
Diff. due to losses and/or transformation	0.15	0.43	1.42	-	2.01	
Statistical differences	-0.00	0.95	0.05	-	1.00	
<i>Memo: international marine bunkers</i>	-	0.31	-	-	0.31	194.1%
<i>Memo: international aviation bunkers</i>	-	0.61	-	-	0.61	-56.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	27.29	113.9%	8.0	8.0
Main activity prod. elec. and heat - oil	23.66	243.0%	6.9	15.0
Manufacturing industries - gas	21.96	161.3%	6.4	21.4
Manufacturing industries - coal/peat	15.57	122.8%	4.6	26.0
Main activity prod. elec. and heat - gas	14.95	78.1%	4.4	30.4
Residential - gas	13.61	292.1%	4.0	34.4
Road - gas	6.18	+	1.8	36.2
Manufacturing industries - oil	4.69	11.2%	1.4	37.6
Other transport - oil	2.68	202.8%	0.8	38.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>136.28</i>	<i>132.6%</i>	<i>40.0</i>	<i>40.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Panama

Figure 1. CO₂ emissions by fuel

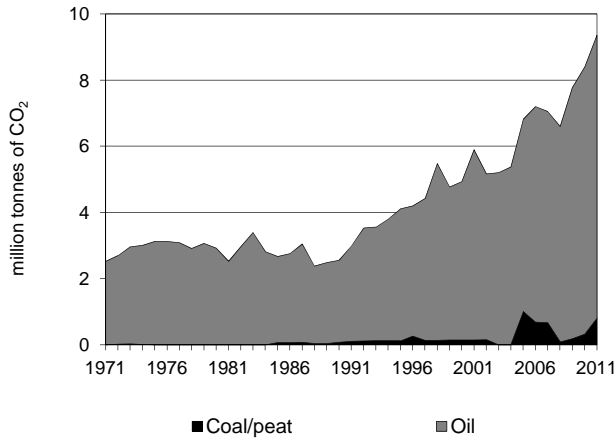


Figure 2. CO₂ emissions by sector

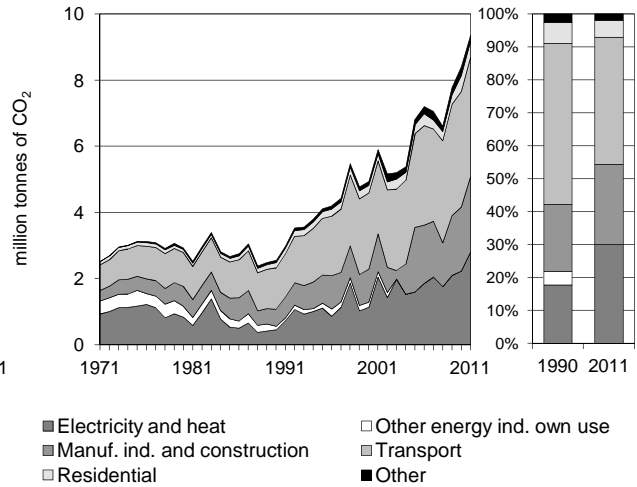


Figure 3. Reference vs Sectoral Approach

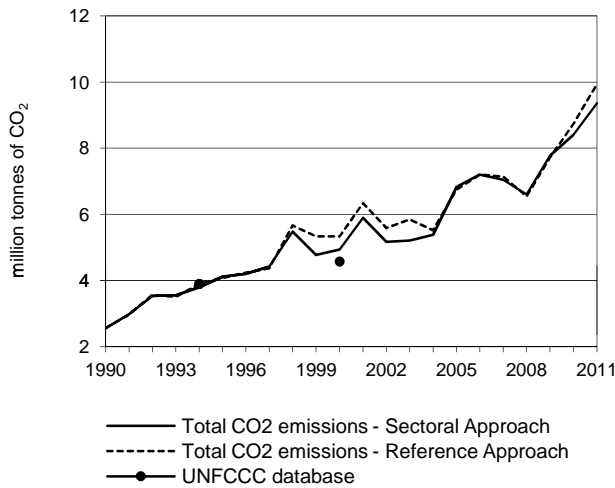


Figure 4. Electricity generation by fuel

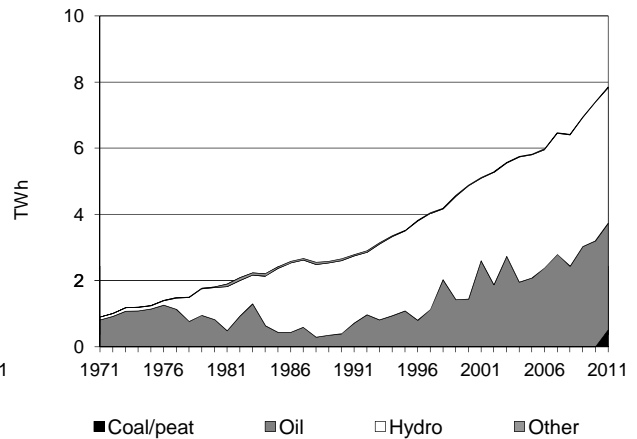


Figure 5. Changes in selected indicators *

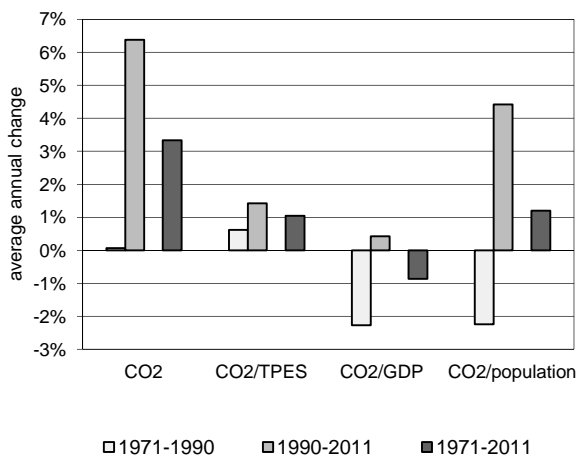
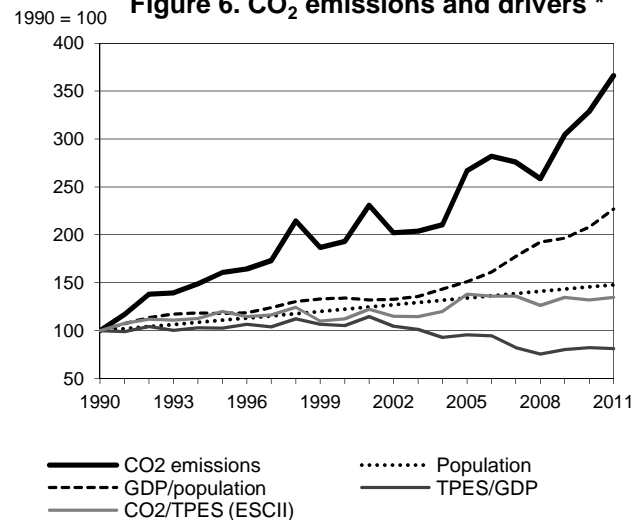


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Panama

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2.55	4.11	4.94	6.82	7.78	8.40	9.36	266.3%
TPES (PJ)	62	84	108	121	141	155	170	172.2%
GDP (billion 2005 USD)	7.64	9.99	12.52	15.47	21.52	23.16	25.61	235.1%
GDP PPP (billion 2005 USD)	14.67	19.17	24.04	29.68	41.31	44.45	49.16	235.1%
Population (millions)	2.42	2.68	2.96	3.24	3.46	3.52	3.57	47.8%
CO ₂ / TPES (tCO ₂ per TJ)	40.9	49.2	45.9	56.5	55.2	54.1	55.1	34.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.33	0.41	0.39	0.44	0.36	0.36	0.37	9.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.17	0.21	0.21	0.23	0.19	0.19	0.19	9.4%
CO ₂ / population (tCO ₂ per capita)	1.06	1.54	1.67	2.11	2.25	2.39	2.62	147.8%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	161	193	267	304	329	366	266.3%
Population	100	111	122	134	143	146	148	47.8%
GDP per population (GDP per capita)	100	118	134	151	196	208	227	126.7%
Energy intensity (TPES/GDP)	100	103	105	96	80	82	81	-18.8%
Carbon intensity: ESCII (CO ₂ /TPES)	100	120	112	138	135	132	135	34.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.80	8.56	-	-	9.36	266.3%
Main activity producer elec. and heat	0.57	2.24	-	-	2.81	590.6%
Unallocated autoproducers	..	..	..	..	..	..
Other energy industry own use	-	-	-	-	-	-100.0%
Manufacturing industries and construction	0.24	2.05	-	-	2.28	337.9%
Transport	-	3.61	-	-	3.61	188.9%
<i>of which: road</i>	-	3.60	-	-	3.60	188.5%
Other	-	0.66	-	-	0.66	192.6%
<i>of which: residential</i>	-	0.48	-	-	0.48	202.1%
Reference Approach	0.80	9.13	-	-	9.94	286.8%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	0.58	-	-	0.58	-
<i>Memo: international marine bunkers</i>	-	7.64	-	-	7.64	54.4%
<i>Memo: international aviation bunkers</i>	-	1.20	-	-	1.20	495.3%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	3.60	188.5%	24.9	24.9
Main activity prod. elec. and heat - oil	2.24	451.1%	15.5	40.3
Manufacturing industries - oil	2.05	360.2%	14.1	54.5
Main activity prod. elec. and heat - coal/peat	0.57	x	3.9	58.4
Residential - oil	0.48	202.1%	3.3	61.7
Manufacturing industries - coal/peat	0.24	208.5%	1.6	63.4
Non-specified other - oil	0.18	169.6%	1.2	64.6
Other transport - oil	0.01	x	0.0	64.6
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>9.36</i>	<i>266.3%</i>	<i>64.6</i>	<i>64.6</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Paraguay

Figure 1. CO₂ emissions by fuel

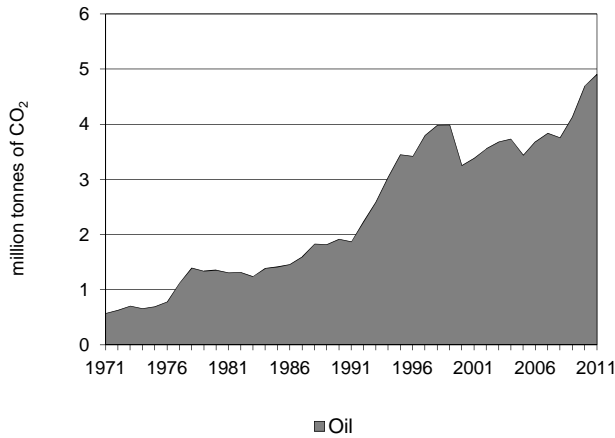


Figure 2. CO₂ emissions by sector

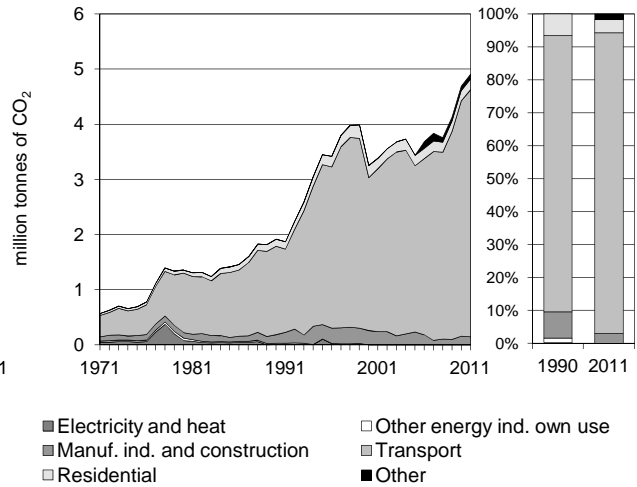


Figure 3. Reference vs Sectoral Approach

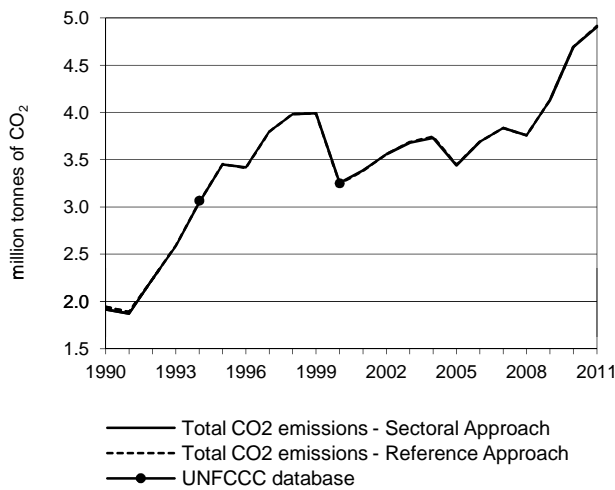


Figure 4. Electricity generation by fuel

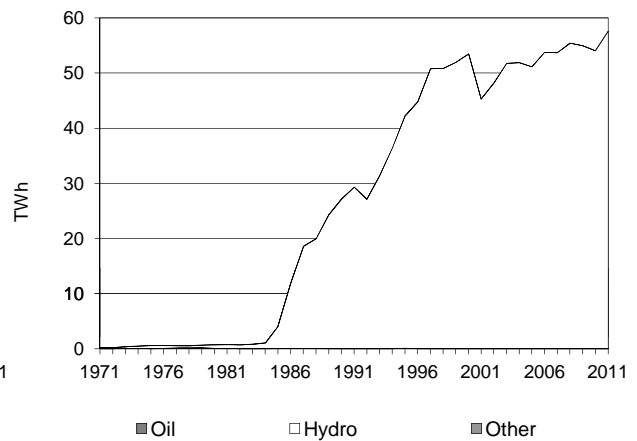


Figure 5. Changes in selected indicators *

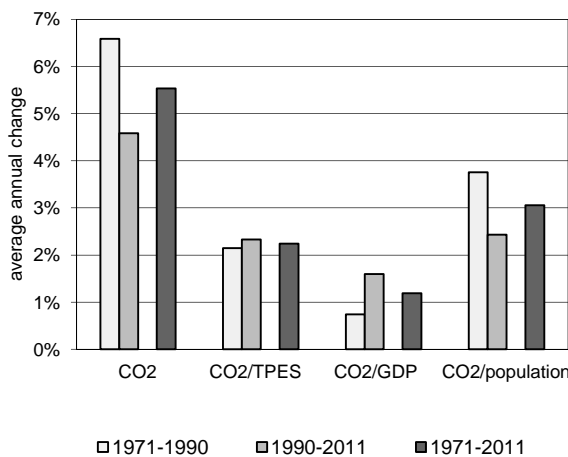
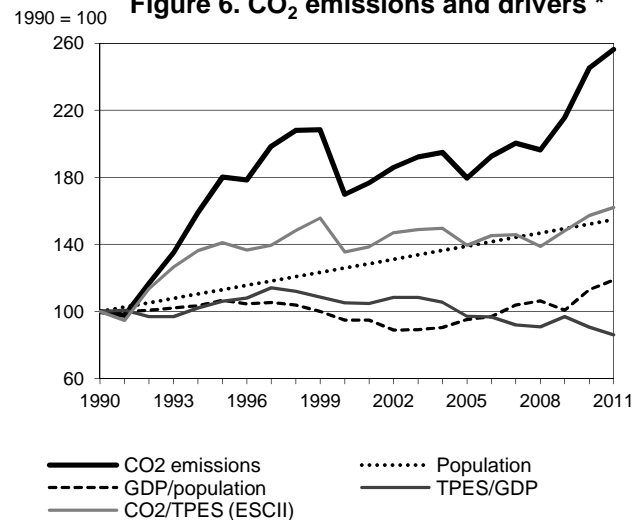


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Paraguay

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	1.91	3.45	3.25	3.44	4.13	4.69	4.91	156.3%
TPES (PJ)	129	164	161	166	187	200	203	58.1%
GDP (billion 2005 USD)	5.64	6.80	6.73	7.47	8.49	9.70	10.36	83.7%
GDP PPP (billion 2005 USD)	17.37	20.93	20.73	23.01	26.14	29.86	31.91	83.7%
Population (millions)	4.24	4.80	5.34	5.90	6.34	6.46	6.57	54.8%
CO ₂ / TPES (tCO ₂ per TJ)	14.9	21.0	20.2	20.8	22.0	23.4	24.1	62.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.34	0.51	0.48	0.46	0.49	0.48	0.47	39.5%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.11	0.16	0.16	0.15	0.16	0.16	0.15	39.6%
CO ₂ / population (tCO ₂ per capita)	0.45	0.72	0.61	0.58	0.65	0.73	0.75	65.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	180	170	180	216	245	256	156.3%
Population	100	113	126	139	149	152	155	54.8%
GDP per population (GDP per capita)	100	107	95	95	101	113	119	18.7%
Energy intensity (TPES/GDP)	100	106	105	97	97	91	86	-13.9%
Carbon intensity: ESCII (CO ₂ /TPES)	100	141	136	140	148	157	162	62.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	4.91	-	-	4.91	156.3%
Main activity producer elec. and heat	-	-	-	-	-	-100.0%
Unallocated autoproducers
Other energy industry own use	-	-	-	-	-	-100.0%
Manufacturing industries and construction	-	0.15	-	-	0.15	-4.4%
Transport	-	4.48	-	-	4.48	179.3%
<i>of which: road</i>	-	4.43	-	-	4.43	183.6%
Other	-	0.28	-	-	0.28	121.0%
<i>of which: residential</i>	-	0.19	-	-	0.19	54.2%
Reference Approach	-	4.92	-	-	4.92	153.0%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	0.01	-	-	0.01	-
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	0.07	-	-	0.07	144.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	4.43	183.6%	13.6	13.6
Residential - oil	0.19	54.2%	0.6	14.2
Manufacturing industries - oil	0.15	-4.4%	0.4	14.7
Non-specified other - oil	0.08	x	0.3	14.9
Other transport - oil	0.05	18.1%	0.1	15.1
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>4.91</i>	<i>156.3%</i>	<i>15.1</i>	<i>15.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Peru

Figure 1. CO₂ emissions by fuel

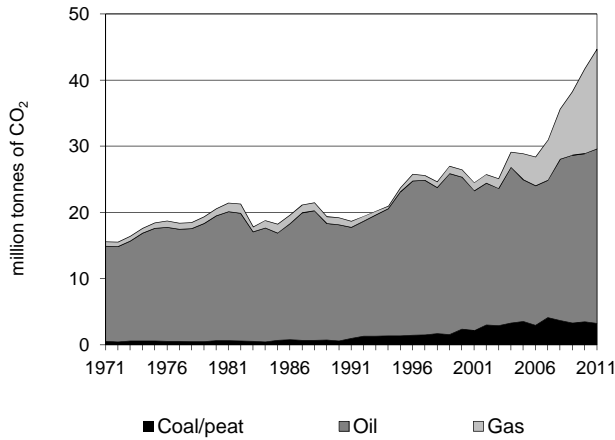


Figure 2. CO₂ emissions by sector

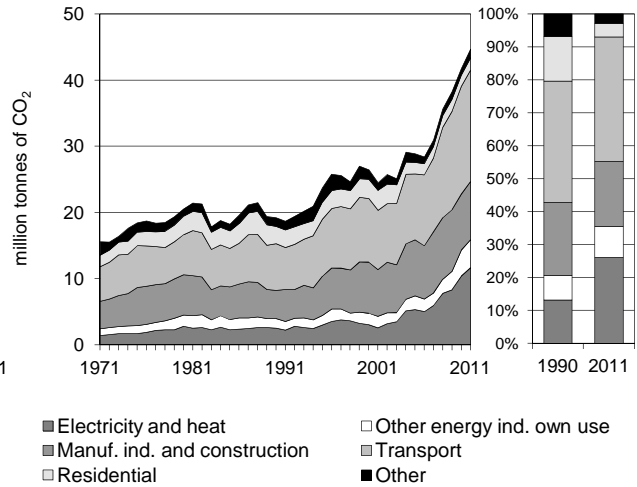


Figure 3. Reference vs Sectoral Approach

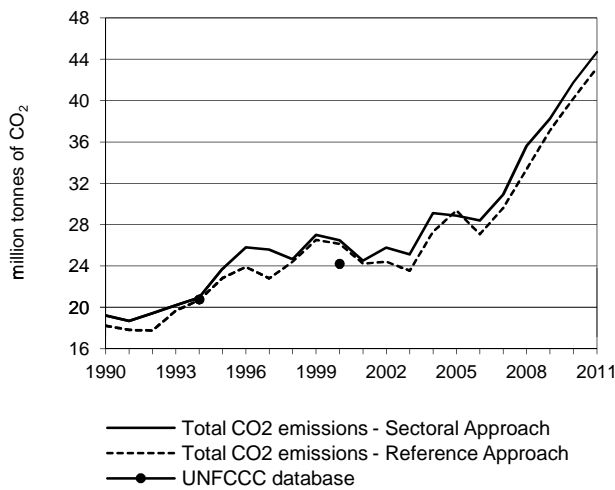


Figure 4. Electricity generation by fuel

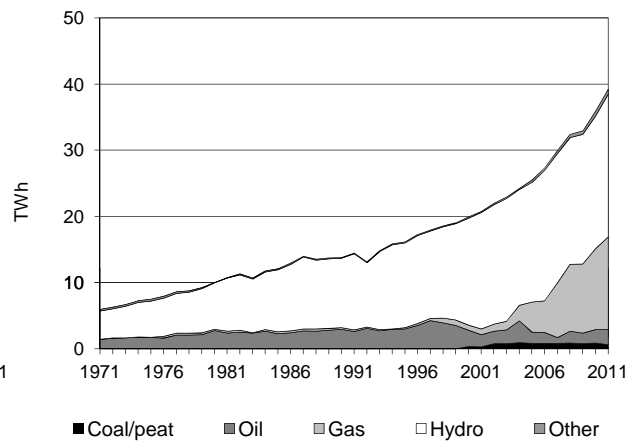


Figure 5. Changes in selected indicators *

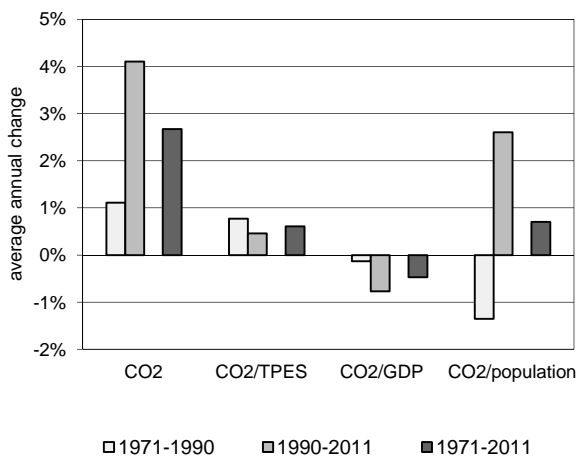
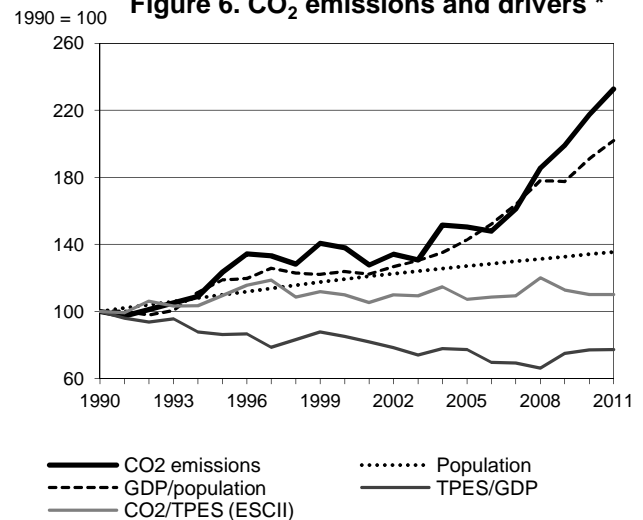


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Peru

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	19.21	23.72	26.49	28.87	38.25	41.75	44.68	132.7%
TPES (PJ)	408	459	512	571	720	804	862	111.4%
GDP (billion 2005 USD)	43.79	57.18	64.65	79.39	103.13	112.19	119.83	173.7%
GDP PPP (billion 2005 USD)	97.08	126.78	143.35	176.02	228.67	248.76	265.69	173.7%
Population (millions)	21.69	23.83	25.86	27.56	28.77	29.08	29.40	35.6%
CO ₂ / TPES (tCO ₂ per TJ)	47.1	51.6	51.8	50.5	53.1	51.9	51.9	10.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.44	0.41	0.41	0.36	0.37	0.37	0.37	-15.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.20	0.19	0.18	0.16	0.17	0.17	0.17	-15.0%
CO ₂ / population (tCO ₂ per capita)	0.89	1.00	1.02	1.05	1.33	1.44	1.52	71.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	124	138	150	199	217	233	132.7%
Population	100	110	119	127	133	134	136	35.6%
GDP per population (GDP per capita)	100	119	124	143	178	191	202	101.9%
Energy intensity (TPES/GDP)	100	86	85	77	75	77	77	-22.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	110	110	107	113	110	110	10.0%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	3.26	26.34	15.08	-	44.68	132.7%
Main activity producer elec. and heat	0.82	1.58	7.96	-	10.36	+
Unallocated autoproducers	-	0.71	0.60	-	1.31	-24.5%
Other energy industry own use	-	1.04	3.20	-	4.24	195.9%
Manufacturing industries and construction	2.45	4.41	1.95	-	8.80	106.8%
Transport	-	15.89	0.95	-	16.85	138.5%
<i>of which: road</i>	-	15.77	-	-	15.77	131.6%
Other	-	2.71	0.43	-	3.14	-19.9%
<i>of which: residential</i>	-	1.81	0.02	-	1.83	-29.5%
Reference Approach	2.61	25.49	15.08	-	43.17	136.8%
Diff. due to losses and/or transformation	-	0.72	-	-	0.72	
Statistical differences	-0.66	-1.57	-	-	-2.23	
<i>Memo: international marine bunkers</i>	-	0.77	-	-	0.77	553.0%
<i>Memo: international aviation bunkers</i>	-	2.38	-	-	2.38	269.1%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	15.77	131.6%	20.5	20.5
Main activity prod. elec. and heat - gas	7.96	x	10.4	30.9
Manufacturing industries - oil	4.41	20.7%	5.7	36.6
Other energy industry own use - gas	3.20	338.4%	4.2	40.8
Manufacturing industries - coal/peat	2.45	346.4%	3.2	44.0
Manufacturing industries - gas	1.95	+	2.5	46.5
Residential - oil	1.81	-27.0%	2.4	48.8
Main activity prod. elec. and heat - oil	1.58	96.4%	2.1	50.9
Other energy industry own use - oil	1.04	48.1%	1.4	52.3
<i>Memo: total CO₂ from fuel combustion</i>	44.68	132.7%	58.2	58.2

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Philippines

Figure 1. CO₂ emissions by fuel

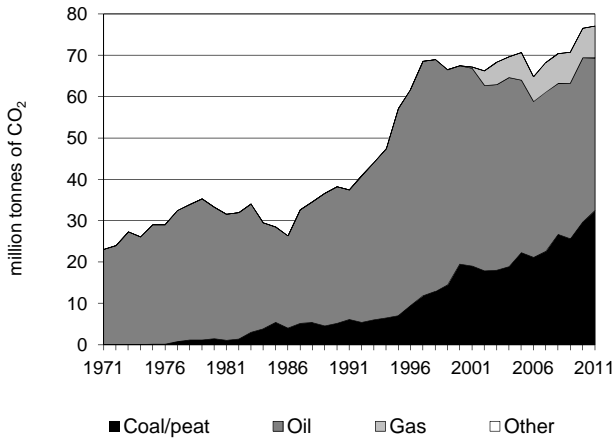


Figure 2. CO₂ emissions by sector

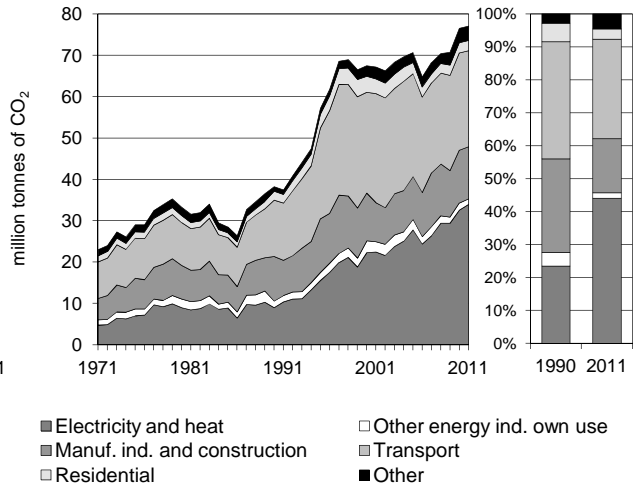


Figure 3. Reference vs Sectoral Approach

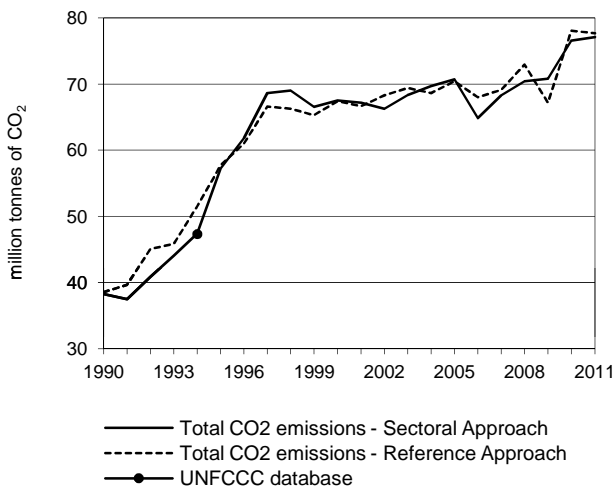


Figure 4. Electricity generation by fuel

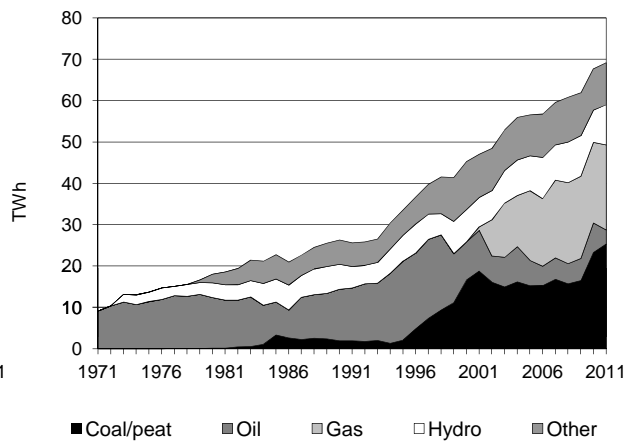


Figure 5. Changes in selected indicators *

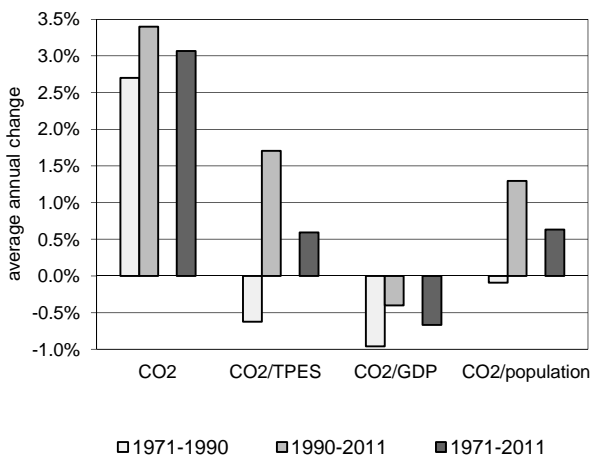
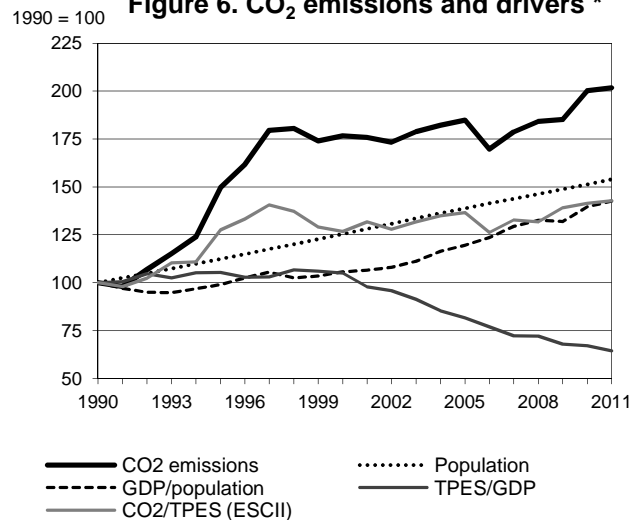


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Philippines

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	38.23	57.20	67.52	70.71	70.79	76.57	77.12	101.7%
TPES (PJ)	1 198	1 404	1 669	1 623	1 595	1 696	1 694	41.4%
GDP (billion 2005 USD)	62.10	69.13	82.35	103.07	121.83	131.13	136.26	119.4%
GDP PPP (billion 2005 USD)	157.25	175.04	208.54	260.99	308.51	332.06	345.03	119.4%
Population (millions)	61.63	69.26	77.31	85.55	91.70	93.26	94.85	53.9%
CO ₂ / TPES (tCO ₂ per TJ)	31.9	40.7	40.4	43.6	44.4	45.1	45.5	42.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.62	0.83	0.82	0.69	0.58	0.58	0.57	-8.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.24	0.33	0.32	0.27	0.23	0.23	0.22	-8.1%
CO ₂ / population (tCO ₂ per capita)	0.62	0.83	0.87	0.83	0.77	0.82	0.81	31.0%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	150	177	185	185	200	202	101.7%
Population	100	112	125	139	149	151	154	53.9%
GDP per population (GDP per capita)	100	99	106	120	132	140	143	42.6%
Energy intensity (TPES/GDP)	100	105	105	82	68	67	64	-35.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	128	127	137	139	141	143	42.7%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	32.46	36.94	7.69	0.03	77.12	101.7%
Main activity producer elec. and heat	24.15	2.53	7.30	0.03	34.00	279.2%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	1.07	0.21	-	1.28	-20.0%
Manufacturing industries and construction	8.32	4.11	0.18	-	12.60	16.3%
Transport	-	23.29	0.00	-	23.29	71.2%
<i>of which: road</i>	-	20.31	0.00	-	20.31	78.1%
Other	-	5.95	-	-	5.95	84.2%
<i>of which: residential</i>	-	2.44	-	-	2.44	12.8%
Reference Approach	33.10	36.87	7.69	0.03	77.69	101.6%
Diff. due to losses and/or transformation	0.07	0.65	-	-	0.72	
Statistical differences	0.57	-0.71	-0.00	-	-0.14	
<i>Memo: international marine bunkers</i>	-	0.68	-	-	0.68	228.7%
<i>Memo: international aviation bunkers</i>	-	3.17	-	-	3.17	215.2%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	24.15	+	15.9	15.9
Road - oil	20.31	78.0%	13.3	29.2
Manufacturing industries - coal/peat	8.32	156.6%	5.5	34.7
Main activity prod. elec. and heat - gas	7.30	x	4.8	39.4
Manufacturing industries - oil	4.11	-45.9%	2.7	42.1
Non-specified other - oil	3.51	228.8%	2.3	44.5
Other transport - oil	2.98	35.8%	2.0	46.4
Main activity prod. elec. and heat - oil	2.53	-63.9%	1.7	48.1
Residential - oil	2.44	12.8%	1.6	49.7
<i>Memo: total CO₂ from fuel combustion</i>	<i>77.12</i>	<i>101.7%</i>	<i>50.6</i>	<i>50.6</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Poland

Figure 1. CO₂ emissions by fuel

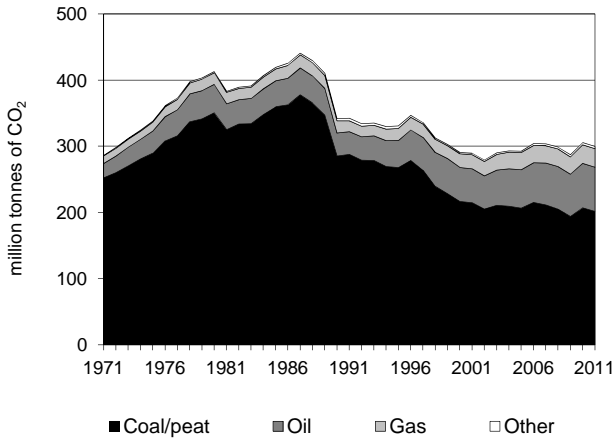


Figure 2. CO₂ emissions by sector

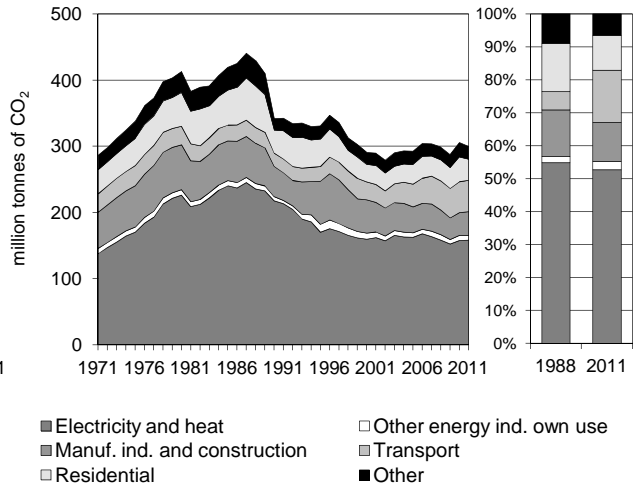


Figure 3. Reference vs Sectoral Approach

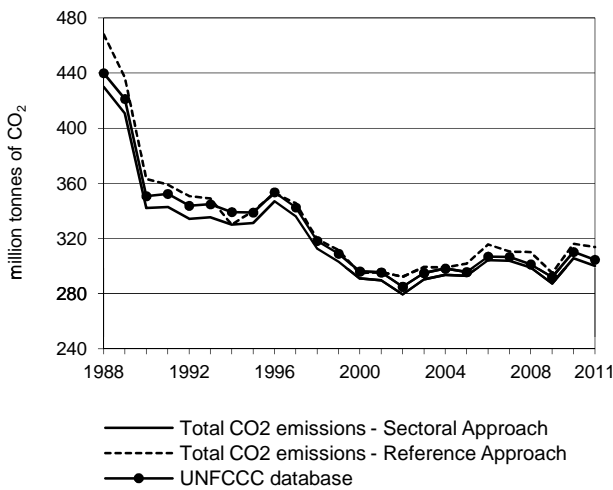


Figure 4. Electricity generation by fuel

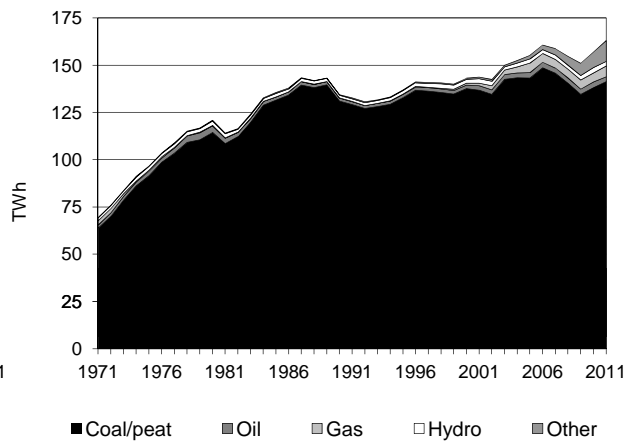


Figure 5. Changes in selected indicators *

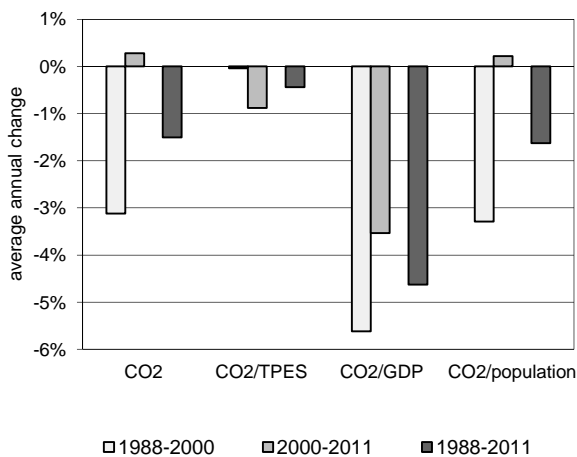
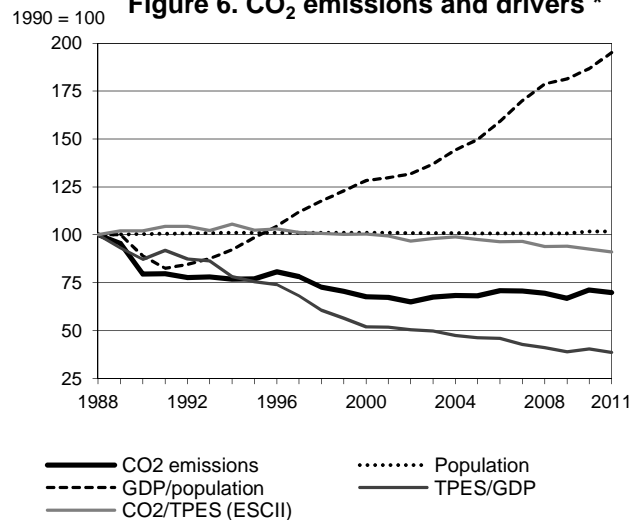


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Poland *
Key indicators

	1988	1990	1995	2005	2009	2010	2011	% change 88-11
CO ₂ Sectoral Approach (MtCO ₂)	429.78	342.11	331.10	292.90	287.35	305.61	300.00	-30.2%
TPES (PJ)	5 538	4 317	4 165	3 868	3 936	4 251	4 242	-23.4%
GDP (billion 2005 USD)	201.46	180.14	200.60	303.91	368.32	382.59	399.89	98.5%
GDP PPP (billion 2005 USD)	348.73	311.83	347.25	526.08	637.57	662.27	692.21	98.5%
Population (millions)	37.86	38.03	38.28	38.16	38.15	38.52	38.53	1.8%
CO ₂ / TPES (tCO ₂ per TJ)	77.6	79.3	79.5	75.7	73.0	71.9	70.7	-8.9%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	2.13	1.90	1.65	0.96	0.78	0.80	0.75	-64.8%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.23	1.10	0.95	0.56	0.45	0.46	0.43	-64.8%
CO ₂ / population (tCO ₂ per capita)	11.35	9.00	8.65	7.68	7.53	7.93	7.79	-31.4%
CO₂ emissions and drivers - Kaya decomposition (1988=100) **								
CO ₂ emissions	100	80	77	68	67	71	70	-30.2%
Population	100	100	101	101	101	102	102	1.8%
GDP per population (GDP per capita)	100	89	98	150	181	187	195	95.1%
Energy intensity (TPES/GDP)	100	87	76	46	39	40	39	-61.4%
Carbon intensity: ESCII (CO ₂ /TPES)	100	102	102	98	94	93	91	-8.9%

* Under the Convention Poland is allowed to use 1988 as the base year. ** Please see Part I, Chapter 1 for methodological notes. Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 88-11
Sectoral Approach	201.96	66.47	28.11	3.45	300.00	-30.2%
Main activity producer elec. and heat	148.37	0.65	2.81	0.52	152.35	-8.5%
Unallocated autoproducers	4.18	1.08	0.39	0.15	5.80	-91.6%
Other energy industry own use	1.88	3.54	2.10	0.00	7.52	-7.1%
Manufacturing industries and construction	17.98	4.62	10.29	2.77	35.66	-41.4%
Transport	-	46.89	0.52	-	47.41	98.3%
<i>of which: road</i>	-	46.30	-	-	46.30	127.7%
Other	29.56	9.69	12.01	0.00	51.26	-49.4%
<i>of which: residential</i>	22.34	1.78	7.56	-	31.68	-49.7%
Reference Approach	213.12	68.54	28.59	3.45	313.70	-33.0%
Diff. due to losses and/or transformation	2.71	1.65	0.62	-	4.98	
Statistical differences	8.44	0.41	-0.14	-0.00	8.72	
<i>Memo: international marine bunkers</i>	-	0.53	-	-	0.53	-69.2%
<i>Memo: international aviation bunkers</i>	-	1.38	-	-	1.38	23.1%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 88-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	148.37	-10.0%	37.6	37.6
Road - oil	46.30	127.7%	11.7	49.3
Residential - coal/peat	22.34	-60.7%	5.7	55.0
Manufacturing industries - coal/peat	17.98	-56.3%	4.6	59.5
Manufacturing industries - gas	10.29	-9.4%	2.6	62.1
Non-specified other - oil	7.91	103.6%	2.0	64.1
Residential - gas	7.56	32.0%	1.9	66.0
Non-specified other sectors - coal/peat	7.22	-78.4%	1.8	67.9
Manufacturing industries - oil	4.62	-28.8%	1.2	69.0
<i>Memo: total CO₂ from fuel combustion</i>	<i>300.00</i>	<i>-30.2%</i>	<i>76.0</i>	<i>76.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Portugal

Figure 1. CO₂ emissions by fuel

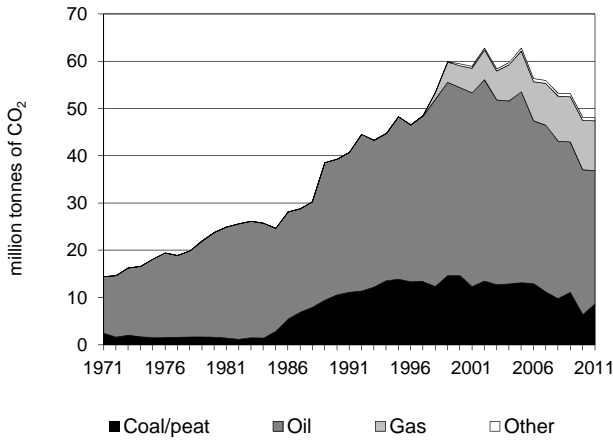


Figure 2. CO₂ emissions by sector

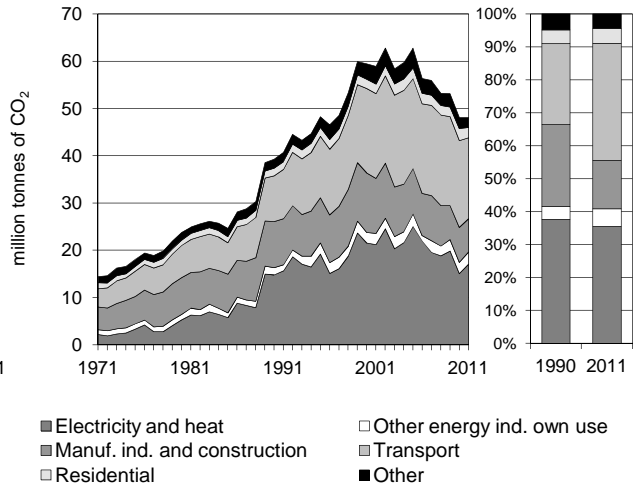


Figure 3. Reference vs Sectoral Approach

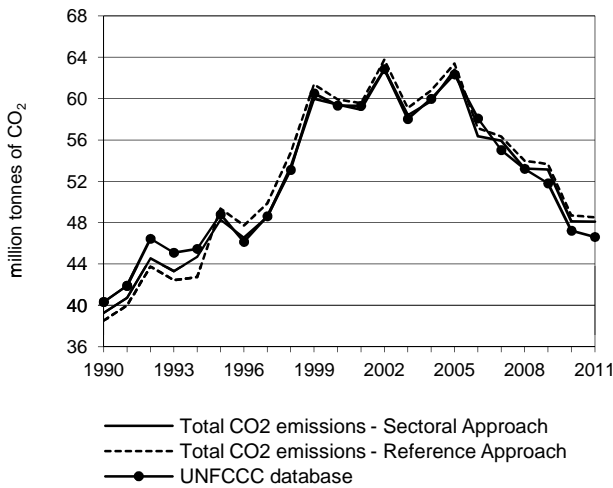


Figure 4. Electricity generation by fuel

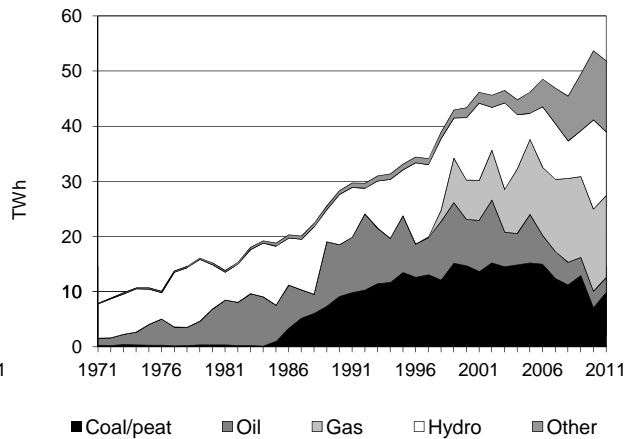


Figure 5. Changes in selected indicators *

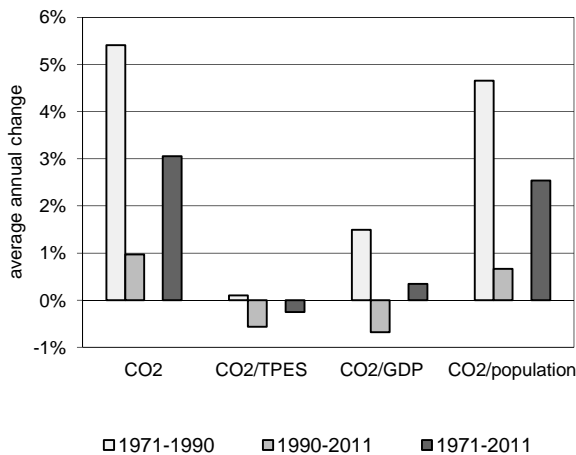
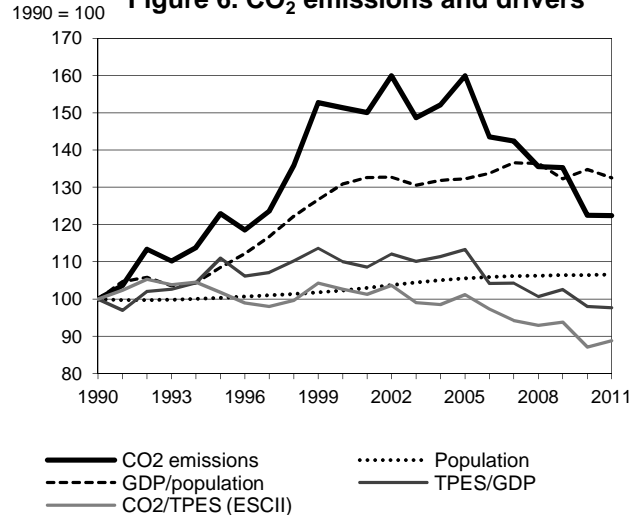


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Portugal

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	39.28	48.27	59.44	62.81	53.14	48.11	48.08	22.4%
TPES (PJ)	701	846	1 033	1 108	1 011	986	966	37.9%
GDP (billion 2005 USD)	137.44	149.56	184.10	191.85	193.42	197.17	194.10	41.2%
GDP PPP (billion 2005 USD)	161.50	175.74	216.33	225.43	227.28	231.68	228.08	41.2%
Population (millions)	10.00	10.03	10.23	10.55	10.63	10.64	10.65	6.6%
CO ₂ / TPES (tCO ₂ per TJ)	56.0	57.0	57.5	56.7	52.6	48.8	49.8	-11.2%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.29	0.32	0.32	0.33	0.27	0.24	0.25	-13.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.24	0.27	0.27	0.28	0.23	0.21	0.21	-13.3%
CO ₂ / population (tCO ₂ per capita)	3.93	4.81	5.81	5.95	5.00	4.52	4.51	14.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	123	151	160	135	122	122	22.4%
Population	100	100	102	106	106	106	107	6.6%
GDP per population (GDP per capita)	100	108	131	132	132	135	133	32.5%
Energy intensity (TPES/GDP)	100	111	110	113	103	98	98	-2.4%
Carbon intensity: ESCII (CO ₂ /TPES)	100	102	103	101	94	87	89	-11.2%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	8.65	28.22	10.56	0.65	48.08	22.4%
Main activity producer elec. and heat	8.57	0.90	3.86	-	13.33	-6.2%
Unallocated autoproducers	-	0.71	2.56	0.47	3.74	537.8%
Other energy industry own use	-	2.29	0.30	-	2.58	68.9%
Manufacturing industries and construction	0.08	4.08	2.69	0.18	7.02	-27.8%
Transport	-	17.10	0.03	-	17.13	76.9%
<i>of which: road</i>	-	16.17	0.03	-	16.20	79.2%
Other	-	3.15	1.12	-	4.28	21.2%
<i>of which: residential</i>	-	1.58	0.60	-	2.18	33.7%
Reference Approach	8.58	28.87	10.43	0.65	48.52	25.9%
Diff. due to losses and/or transformation	-	0.45	0.01	-	0.46	
Statistical differences	-0.07	0.19	-0.14	-	-0.02	
<i>Memo: international marine bunkers</i>	-	1.78	-	-	1.78	-6.7%
<i>Memo: international aviation bunkers</i>	-	2.69	-	-	2.69	80.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	16.17	78.9%	22.6	22.6
Main activity prod. elec. and heat - coal/peat	8.57	8.8%	12.0	34.6
Manufacturing industries - oil	4.08	-44.5%	5.7	40.3
Main activity prod. elec. and heat - gas	3.86	x	5.4	45.7
Manufacturing industries - gas	2.69	x	3.8	49.5
Unallocated autoproducers - gas	2.56	x	3.6	53.1
Other energy industry own use - oil	2.29	52.7%	3.2	56.3
Non-specified other - oil	1.58	-15.7%	2.2	58.5
Residential - oil	1.58	2.8%	2.2	60.7
<i>Memo: total CO₂ from fuel combustion</i>	<i>48.08</i>	<i>22.4%</i>	<i>67.3</i>	<i>67.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Qatar

Figure 1. CO₂ emissions by fuel

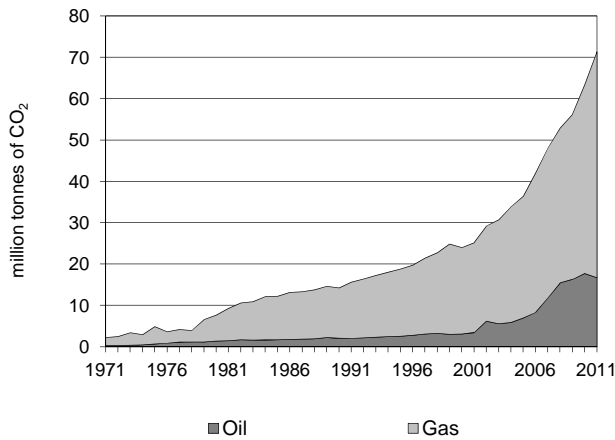


Figure 2. CO₂ emissions by sector

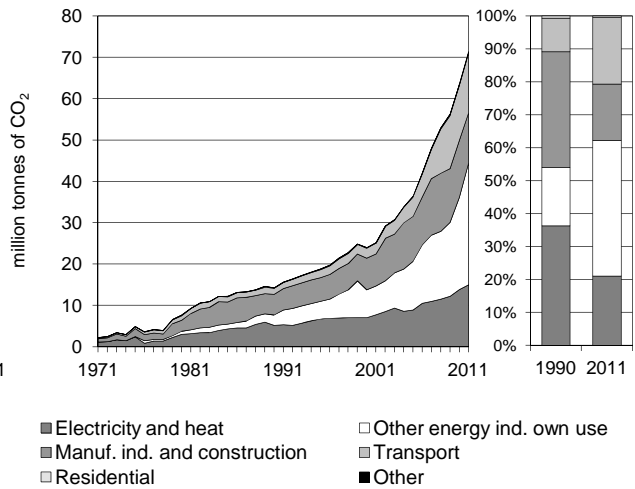


Figure 3. Reference vs Sectoral Approach

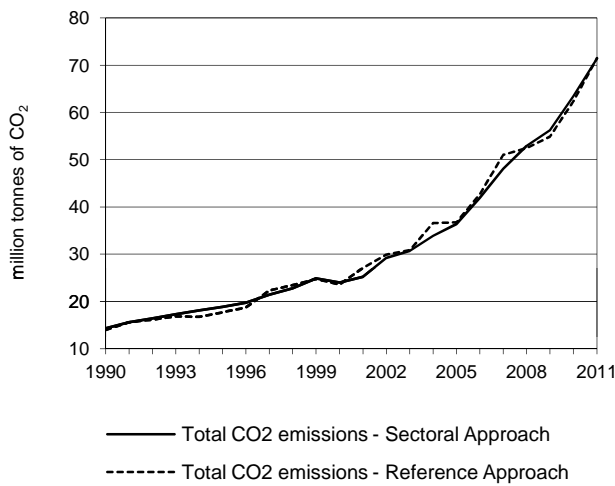


Figure 4. Electricity generation by fuel

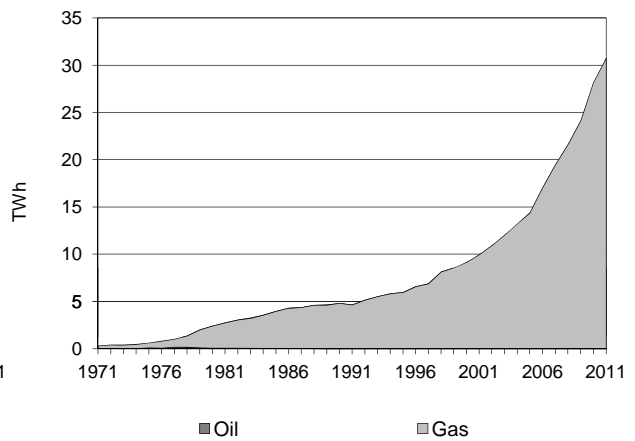


Figure 5. Changes in selected indicators *

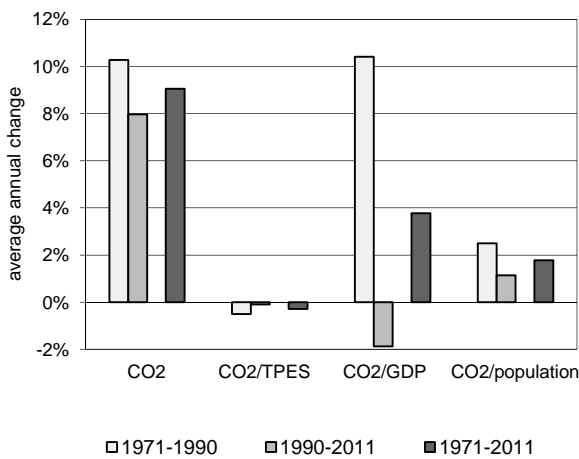
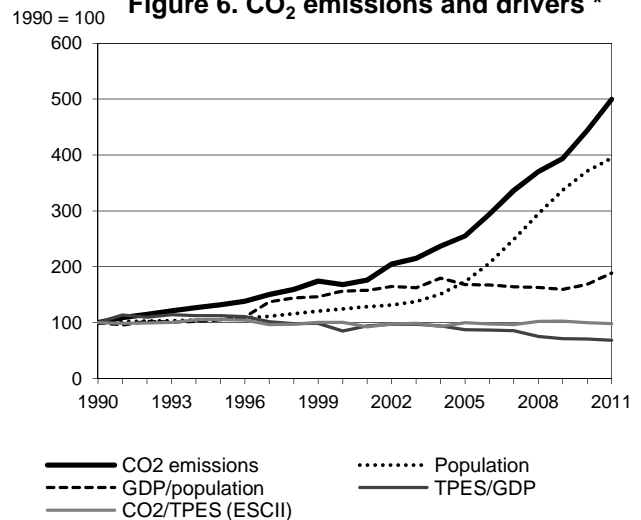


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Qatar

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	14.28	18.82	23.97	36.40	56.20	63.44	71.38	399.8%
TPES (PJ)	273	341	455	697	1 044	1 213	1 394	410.0%
GDP (billion 2005 USD)	14.78	16.38	28.89	43.04	79.40	92.58	109.99	644.3%
GDP PPP (billion 2005 USD)	19.59	21.72	38.31	57.07	105.28	122.76	145.84	644.3%
Population (millions)	0.47	0.50	0.59	0.82	1.60	1.76	1.87	294.5%
CO ₂ / TPES (tCO ₂ per TJ)	52.3	55.2	52.6	52.2	53.8	52.3	51.2	-2.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.97	1.15	0.83	0.85	0.71	0.69	0.65	-32.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.73	0.87	0.63	0.64	0.53	0.52	0.49	-32.8%
CO ₂ / population (tCO ₂ per capita)	30.13	37.57	40.56	44.33	35.17	36.06	38.17	26.7%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	132	168	255	394	444	500	399.8%
Population	100	106	125	173	337	371	395	294.5%
GDP per population (GDP per capita)	100	105	157	168	159	169	189	88.7%
Energy intensity (TPES/GDP)	100	113	85	88	71	71	69	-31.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	106	101	100	103	100	98	-2.0%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	16.73	54.65	-	71.38	399.8%
Main activity producer elec. and heat	-	-	1.93	-	1.93	60.2%
Unallocated autoproducers	-	-	13.12	-	13.12	229.4%
Other energy industry own use	-	0.40	28.97	-	29.37	+
Manufacturing industries and construction	-	1.55	10.62	-	12.18	142.8%
Transport	-	14.50	-	-	14.50	893.9%
<i>of which: road</i>	-	14.50	-	-	14.50	893.9%
Other	-	0.29	-	-	0.29	207.4%
<i>of which: residential</i>	-	0.29	-	-	0.29	207.4%
Reference Approach	-	5.34	66.13	-	71.47	412.9%
Diff. due to losses and/or transformation	-	- 11.39	10.70	-	- 0.69	
Statistical differences	-	-	0.78	-	0.78	
<i>Memo: international marine bunkers</i>	-	..	-	-
<i>Memo: international aviation bunkers</i>	-	4.66	-	-	4.66	+

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Other energy industry own use - gas	28.97	+	23.4	23.4
Road - oil	14.50	893.9%	11.7	35.0
Unallocated autoproducers - gas	13.12	229.4%	10.6	45.6
Manufacturing industries - gas	10.62	121.9%	8.6	54.2
Main activity prod. elec. and heat - gas	1.93	60.2%	1.6	55.7
Manufacturing industries - oil	1.55	580.6%	1.3	57.0
Other energy industry own use - oil	0.40	16.1%	0.3	57.3
Residential - oil	0.29	207.4%	0.2	57.5
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>71.38</i>	<i>399.8%</i>	<i>57.5</i>	<i>57.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Romania

Figure 1. CO₂ emissions by fuel

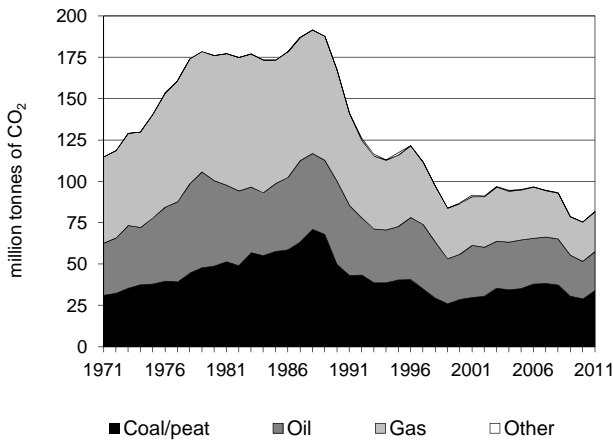


Figure 2. CO₂ emissions by sector

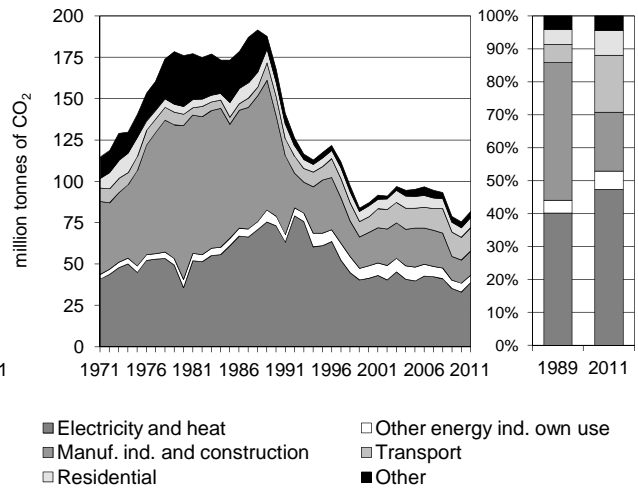


Figure 3. Reference vs Sectoral Approach

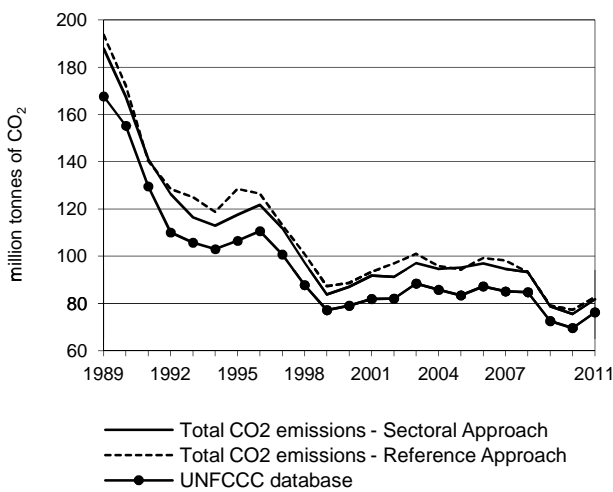


Figure 4. Electricity generation by fuel

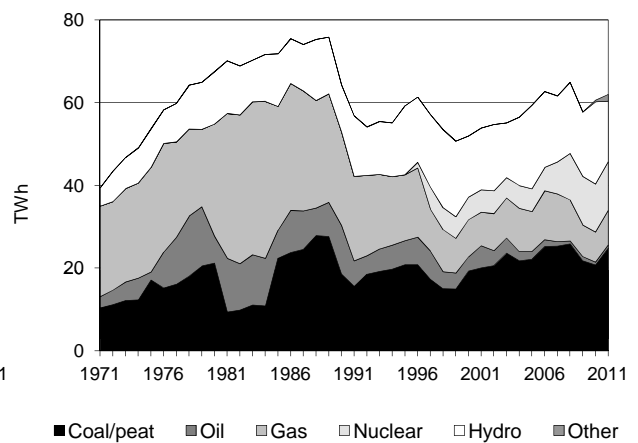


Figure 5. Changes in selected indicators *

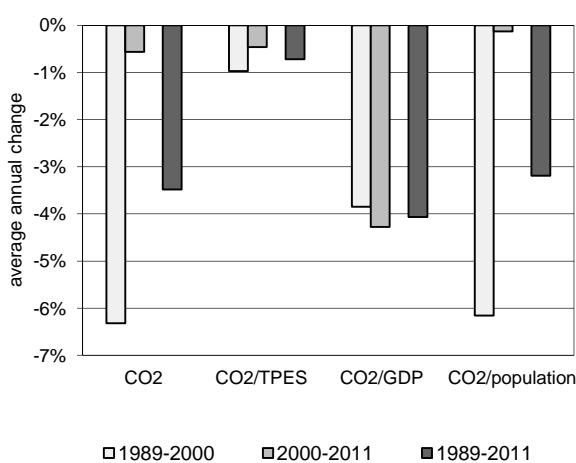
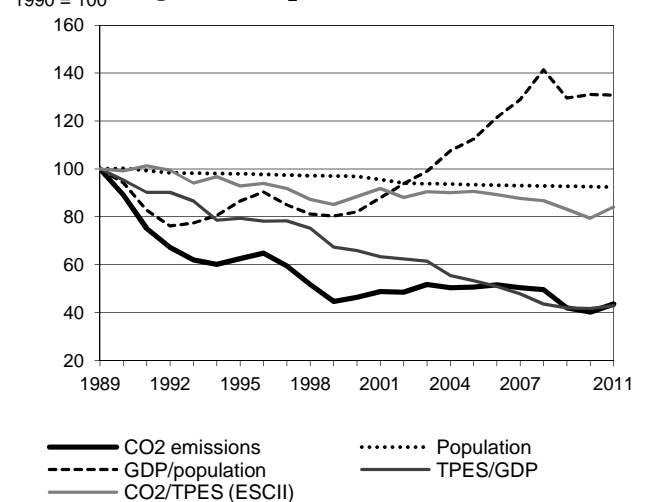


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Romania *

Key indicators

	1989	1990	1995	2005	2009	2010	2011	% change 89-11
CO ₂ Sectoral Approach (MtCO ₂)	187.82	167.50	117.49	95.23	78.76	75.54	81.78	-56.5%
TPES (PJ)	2 897	2 606	1 951	1 620	1 460	1 467	1 500	-48.2%
GDP (billion 2005 USD)	94.26	88.98	79.91	98.91	113.27	114.35	113.93	20.9%
GDP PPP (billion 2005 USD)	193.00	182.20	163.61	202.53	231.93	234.13	233.27	20.9%
Population (millions)	23.16	23.20	22.68	21.63	21.48	21.44	21.39	-7.6%
CO ₂ / TPES (tCO ₂ per TJ)	64.8	64.3	60.2	58.8	53.9	51.5	54.5	-15.9%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.99	1.88	1.47	0.96	0.70	0.66	0.72	-64.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.97	0.92	0.72	0.47	0.34	0.32	0.35	-64.0%
CO ₂ / population (tCO ₂ per capita)	8.11	7.22	5.18	4.40	3.67	3.52	3.82	-52.9%
CO₂ emissions and drivers - Kaya decomposition (1989=100) **								
CO ₂ emissions	100	89	63	51	42	40	44	-56.5%
Population	100	100	98	93	93	93	92	-7.6%
GDP per population (GDP per capita)	100	94	87	112	130	131	131	30.9%
Energy intensity (TPES/GDP)	100	95	79	53	42	42	43	-57.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	99	93	91	83	79	84	-15.9%

* Under the Convention Romania is allowed to use 1989 as the base year. ** Please see Part I, Chapter 1 for methodological notes. Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 89-11
Sectoral Approach	33.88	23.58	24.19	0.13	81.78	-56.5%
Main activity producer elec. and heat	27.78	1.16	6.48	0.01	35.42	-48.7%
Unallocated autoproducers	2.52	0.23	0.61	0.00	3.36	-48.0%
Other energy industry own use	0.01	3.09	1.41	-	4.51	-38.2%
Manufacturing industries and construction	3.46	2.72	8.32	0.13	14.63	-81.3%
Transport	-	14.07	0.02	-	14.09	34.3%
<i>of which: road</i>	-	12.90	-	-	12.90	43.8%
Other	0.12	2.31	7.35	-	9.78	-39.5%
<i>of which: residential</i>	0.08	0.59	5.45	-	6.12	-26.6%
Reference Approach	33.67	23.67	25.24	0.13	82.70	-57.3%
Diff. due to losses and/or transformation	0.39	-0.94	0.91	-	0.37	
Statistical differences	-0.60	1.02	0.13	-0.00	0.55	
<i>Memo: international marine bunkers</i>	-	0.03	-	-	0.03	..
<i>Memo: international aviation bunkers</i>	-	0.25	-	-	0.25	-66.9%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 89-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	27.78	-20.1%	21.6	21.6
Road - oil	12.90	43.8%	10.0	31.6
Manufacturing industries - gas	8.32	-81.8%	6.5	38.0
Main activity prod. elec. and heat - gas	6.48	-70.9%	5.0	43.0
Residential - gas	5.45	7.3%	4.2	47.3
Manufacturing industries - coal/peat	3.46	-84.5%	2.7	50.0
Other energy industry own use - oil	3.09	-51.3%	2.4	52.4
Manufacturing industries - oil	2.72	-73.8%	2.1	54.5
Unallocated autoproducers - coal/peat	2.52	-61.1%	2.0	56.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>81.78</i>	<i>-56.5%</i>	<i>63.5</i>	<i>63.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Russian Federation

Figure 1. CO₂ emissions by fuel

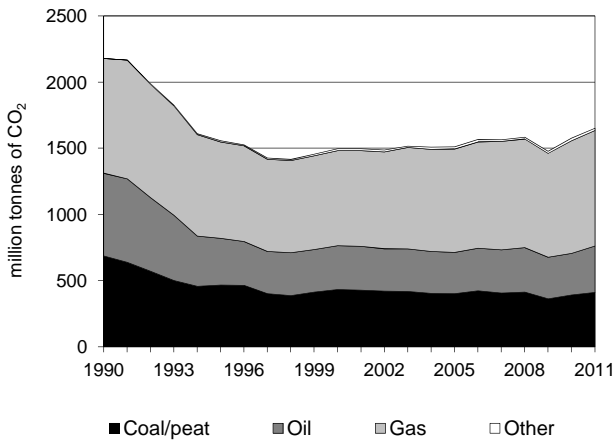


Figure 2. CO₂ emissions by sector

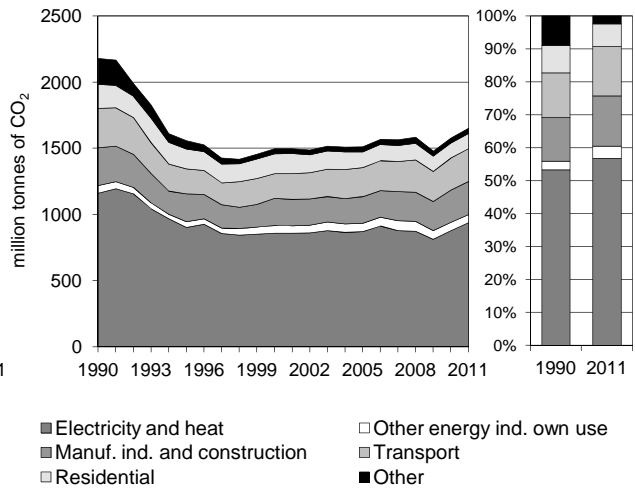


Figure 3. Reference vs Sectoral Approach

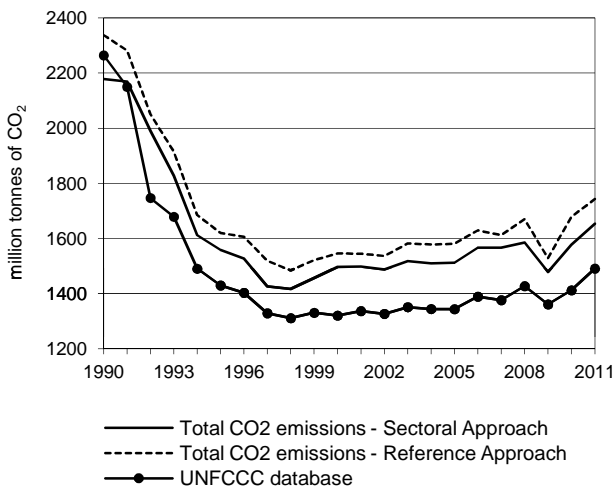


Figure 4. Electricity generation by fuel

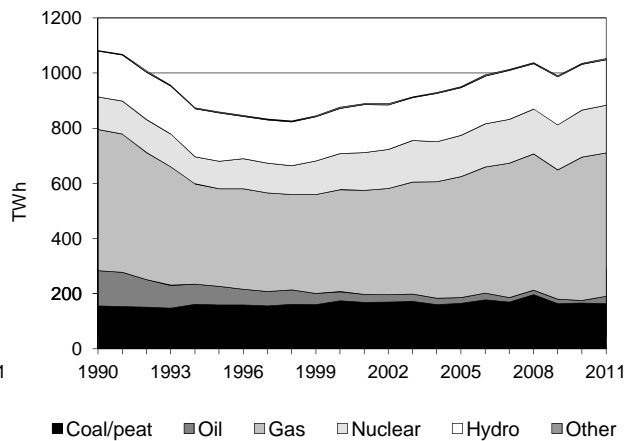


Figure 5. Changes in selected indicators *

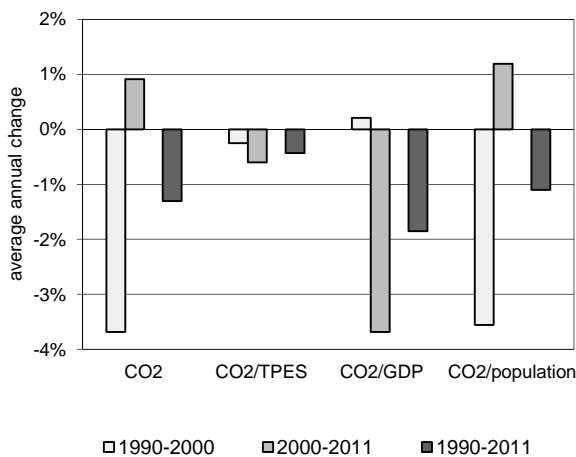
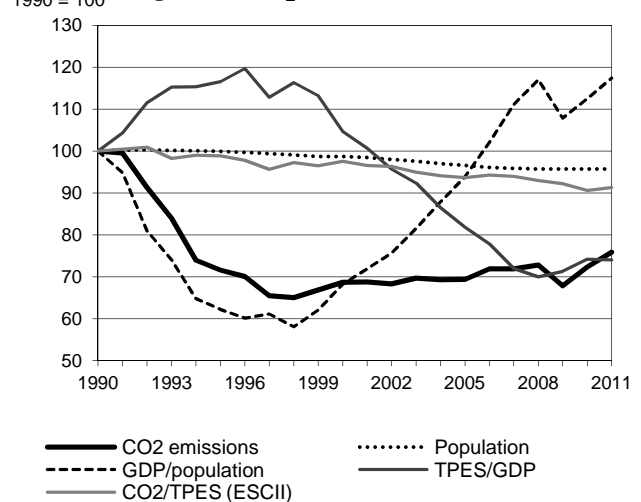


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Russian Federation

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2 178.8	1 558.7	1 496.7	1 511.8	1 478.4	1 576.6	1 653.2	-24.1%
TPES (PJ)	36 810	26 655	25 927	27 286	27 085	29 404	30 604	-16.9%
GDP (billion 2005 USD)	843.1	523.7	567.4	764.0	870.1	907.8	947.2	12.4%
GDP PPP (billion 2005 USD)	1 872.3	1 163.0	1 260.1	1 696.7	1 932.3	2 016.1	2 103.5	12.4%
Population (millions)	148.3	148.1	146.3	143.2	141.9	141.9	141.9	-4.3%
CO ₂ / TPES (tCO ₂ per TJ)	59.2	58.5	57.7	55.4	54.6	53.6	54.0	-8.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	2.58	2.98	2.64	1.98	1.70	1.74	1.75	-32.5%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.16	1.34	1.19	0.89	0.77	0.78	0.79	-32.5%
CO ₂ / population (tCO ₂ per capita)	14.69	10.52	10.23	10.56	10.42	11.11	11.65	-20.7%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	72	69	69	68	72	76	-24.1%
Population	100	100	99	97	96	96	96	-4.3%
GDP per population (GDP per capita)	100	62	68	94	108	113	117	17.4%
Energy intensity (TPES/GDP)	100	117	105	82	71	74	74	-26.0%
Carbon intensity: ESCII (CO ₂ /TPES)	100	99	98	94	92	91	91	-8.7%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	411.1	350.2	873.5	18.5	1 653.2	-24.1%
Main activity producer elec. and heat	206.9	23.6	352.4	-	582.9	-30.2%
Unallocated autoproducers	106.3	30.0	204.0	16.0	356.3	9.1%
Other energy industry own use	6.6	33.8	20.0	0.7	61.0	7.6%
Manufacturing industries and construction	75.4	50.2	124.2	1.2	251.1	-12.6%
Transport	-	174.4	73.1	-	247.5	-16.4%
<i>of which: road</i>	-	140.8	0.2	-	140.9	-7.5%
Other	15.8	38.2	99.8	0.6	154.4	-59.0%
<i>of which: residential</i>	6.1	15.8	92.8	-	114.6	-37.4%
Reference Approach	450.7	385.1	889.0	18.5	1 743.3	-25.4%
Diff. due to losses and/or transformation	22.9	34.9	15.6	-	73.4	
Statistical differences	16.7	- 0.0	- 0.0	- 0.0	16.7	
<i>Memo: international marine bunkers</i>	-	9.4	-	-	9.4	60.7%
<i>Memo: international aviation bunkers</i>	-	19.0	-	-	19.0	-27.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - gas	352.4	1.5%	14.2	14.2
Main activity prod. elec. and heat - coal/peat	206.9	-40.5%	8.3	22.5
Unallocated autoproducers - gas	204.0	10.2%	8.2	30.7
Road - oil	140.8	-6.0%	5.7	36.4
Manufacturing industries - gas	124.2	19.1%	5.0	41.4
Unallocated autoproducers - coal/peat	106.3	26.2%	4.3	45.7
Residential - gas	92.8	-15.8%	3.7	49.4
Manufacturing industries - coal/peat	75.4	-22.2%	3.0	52.5
Other transport - gas	73.0	-5.2%	2.9	55.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>1 653.2</i>	<i>-24.1%</i>	<i>66.6</i>	<i>66.6</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Saudi Arabia

Figure 1. CO₂ emissions by fuel

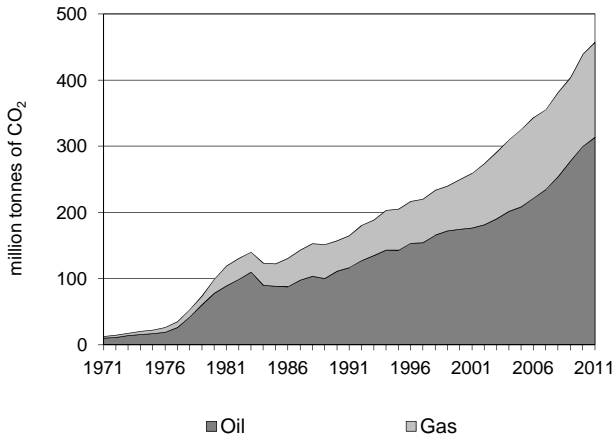


Figure 2. CO₂ emissions by sector

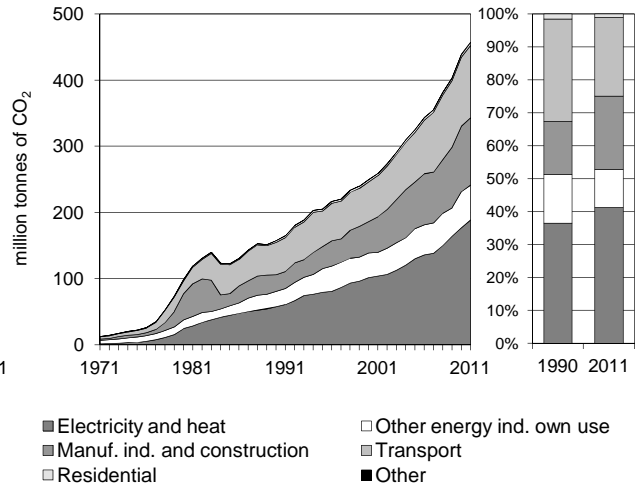


Figure 3. Reference vs Sectoral Approach

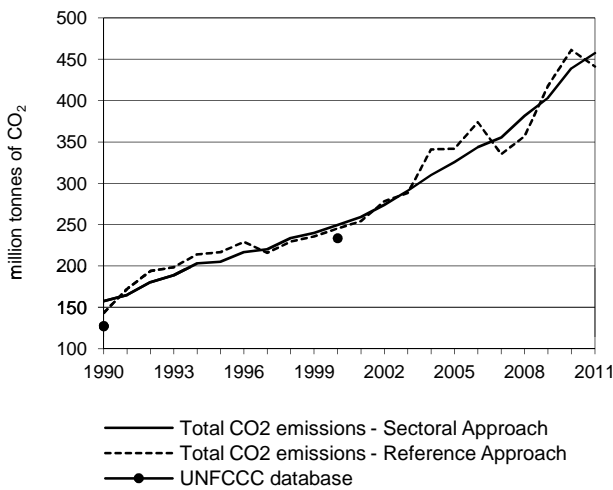


Figure 4. Electricity generation by fuel

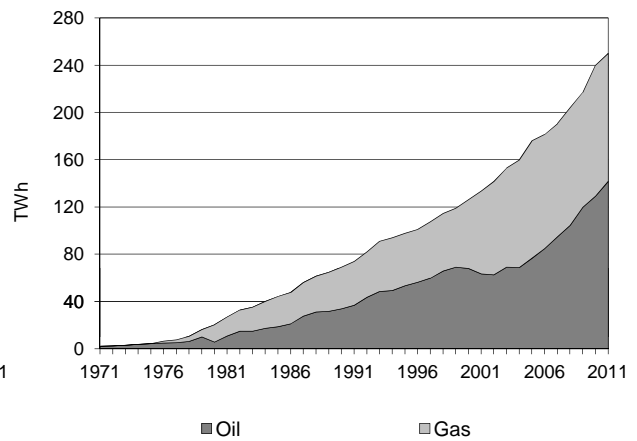


Figure 5. Changes in selected indicators *

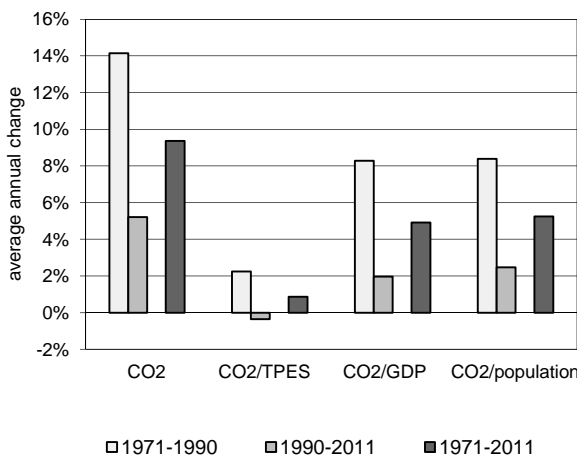
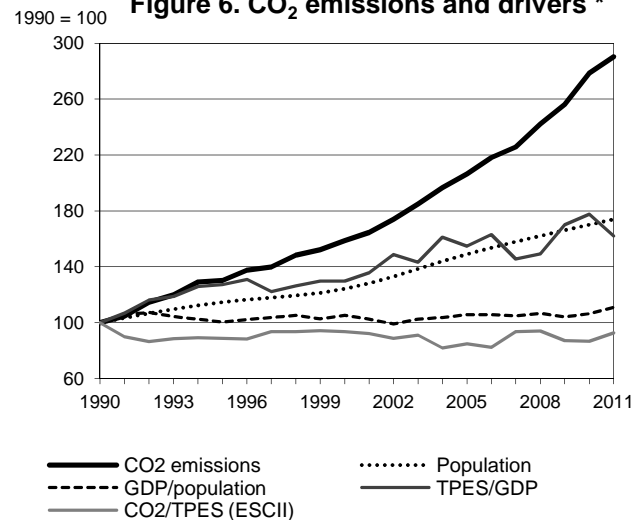


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Saudi Arabia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	157.52	205.04	249.74	325.30	403.46	438.79	457.30	190.3%
TPES (PJ)	2 502	3 665	4 242	6 093	7 355	8 039	7 832	213.0%
GDP (billion 2005 USD)	200.42	230.83	262.04	315.58	346.49	362.57	387.14	93.2%
GDP PPP (billion 2005 USD)	311.56	358.83	407.35	490.58	538.63	563.63	601.82	93.2%
Population (millions)	16.14	18.49	20.05	24.04	26.81	27.45	28.08	74.0%
CO ₂ / TPES (tCO ₂ per TJ)	63.0	55.9	58.9	53.4	54.9	54.6	58.4	-7.3%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.79	0.89	0.95	1.03	1.16	1.21	1.18	50.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.51	0.57	0.61	0.66	0.75	0.78	0.76	50.3%
CO ₂ / population (tCO ₂ per capita)	9.76	11.09	12.46	13.53	15.05	15.99	16.28	66.8%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	130	159	207	256	279	290	190.3%
Population	100	115	124	149	166	170	174	74.0%
GDP per population (GDP per capita)	100	101	105	106	104	106	111	11.0%
Energy intensity (TPES/GDP)	100	127	130	155	170	178	162	62.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	89	94	85	87	87	93	-7.3%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	313.40	143.91	-	457.30	190.3%
Main activity producer elec. and heat	-	100.05	41.96	-	142.01	256.6%
Unallocated autoproducers	-	19.28	27.37	-	46.65	164.1%
Other energy industry own use	-	18.23	34.44	-	52.67	126.9%
Manufacturing industries and construction	-	61.89	40.14	-	102.03	301.7%
Transport	-	109.24	-	-	109.24	123.4%
<i>of which: road</i>	-	107.03	-	-	107.03	126.3%
Other	-	4.70	-	-	4.70	86.8%
<i>of which: residential</i>	-	4.70	-	-	4.70	86.8%
Reference Approach	-	297.28	143.91	-	441.19	208.0%
Diff. due to losses and/or transformation	-	- 11.26	-	-	- 11.26	
Statistical differences	-	- 4.85	-	-	- 4.85	
<i>Memo: international marine bunkers</i>	-	10.63	-	-	10.63	85.3%
<i>Memo: international aviation bunkers</i>	-	6.63	-	-	6.63	38.3%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	107.03	126.3%	19.4	19.4
Main activity prod. elec. and heat - oil	100.05	253.5%	18.1	37.5
Manufacturing industries - oil	61.89	233.5%	11.2	48.8
Main activity prod. elec. and heat - gas	41.96	263.9%	7.6	56.4
Manufacturing industries - gas	40.14	486.9%	7.3	63.7
Other energy industry own use - gas	34.44	236.7%	6.2	69.9
Unallocated autoproducers - gas	27.37	54.9%	5.0	74.9
Unallocated autoproducers - oil	19.28	x	3.5	78.4
Other energy industry own use - oil	18.23	40.4%	3.3	81.7
<i>Memo: total CO₂ from fuel combustion</i>	<i>457.30</i>	<i>190.3%</i>	<i>82.9</i>	<i>82.9</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Senegal

Figure 1. CO₂ emissions by fuel

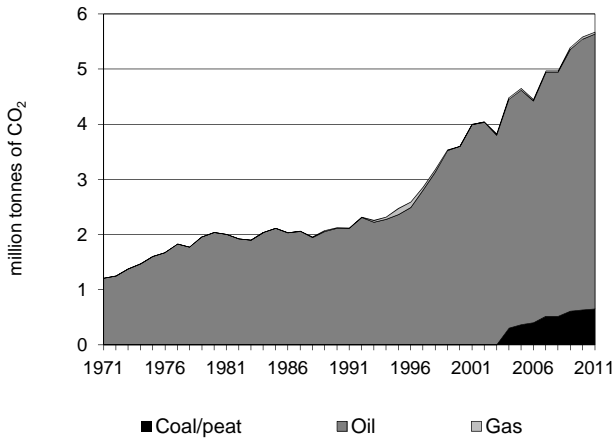


Figure 2. CO₂ emissions by sector

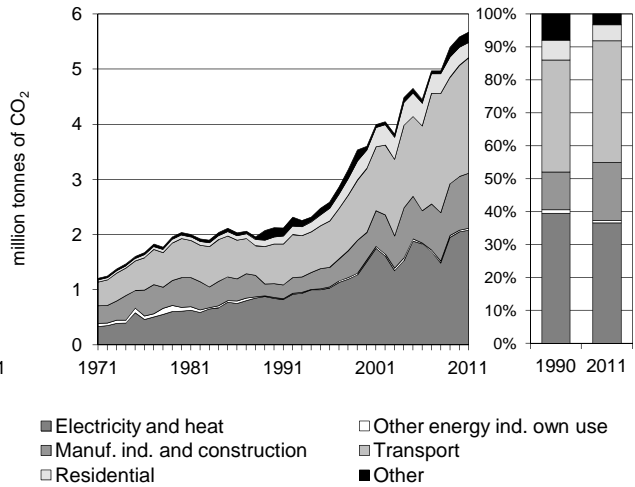


Figure 3. Reference vs Sectoral Approach

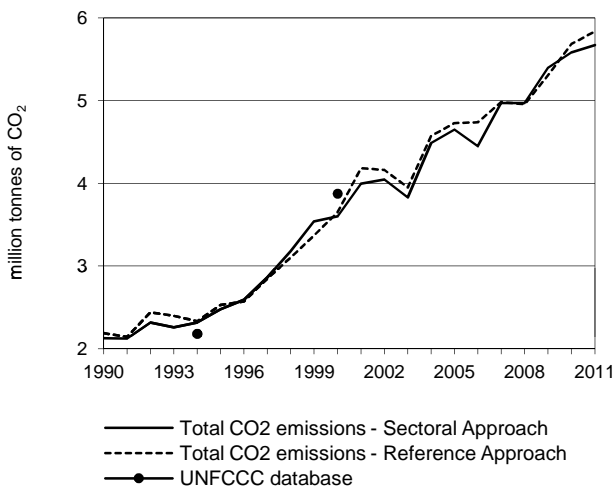


Figure 4. Electricity generation by fuel

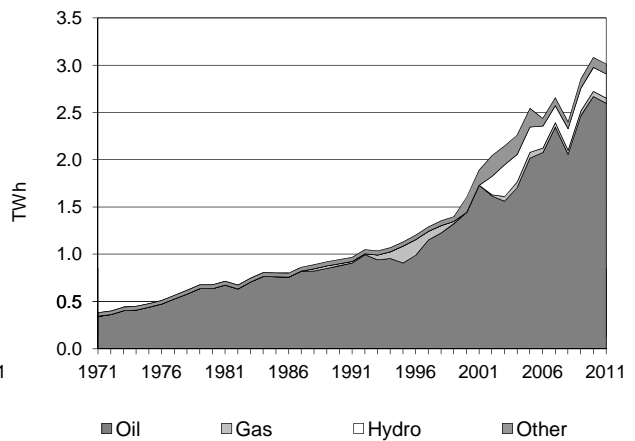


Figure 5. Changes in selected indicators *

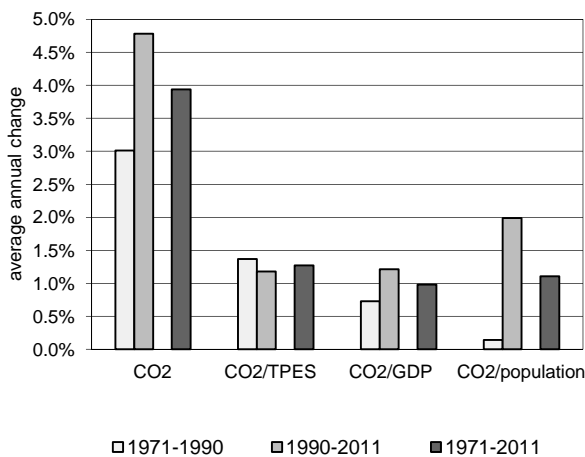
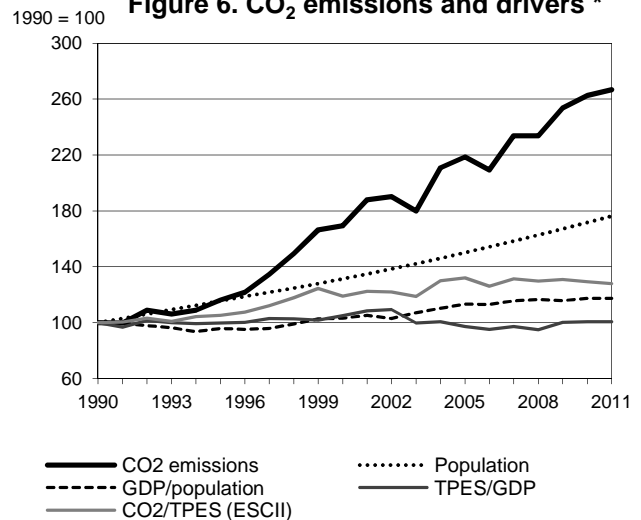


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Senegal

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2.13	2.47	3.60	4.65	5.40	5.58	5.67	166.7%
TPES (PJ)	71	78	100	117	137	143	147	108.4%
GDP (billion 2005 USD)	5.11	5.67	6.93	8.70	9.90	10.31	10.58	107.0%
GDP PPP (billion 2005 USD)	10.72	11.87	14.52	18.23	20.75	21.61	22.18	107.0%
Population (millions)	7.24	8.37	9.51	10.87	12.11	12.43	12.77	76.3%
CO ₂ / TPES (tCO ₂ per TJ)	30.1	31.7	35.9	39.8	39.4	38.9	38.5	28.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.42	0.44	0.52	0.53	0.55	0.54	0.54	28.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.20	0.21	0.25	0.26	0.26	0.26	0.26	28.8%
CO ₂ / population (tCO ₂ per capita)	0.29	0.30	0.38	0.43	0.45	0.45	0.44	51.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	116	169	219	254	263	267	166.7%
Population	100	116	131	150	167	172	176	76.3%
GDP per population (GDP per capita)	100	96	103	113	116	117	117	17.4%
Energy intensity (TPES/GDP)	100	100	105	97	100	101	101	0.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	105	119	132	131	129	128	28.0%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.65	4.98	0.04	-	5.67	166.7%
Main activity producer elec. and heat	-	1.77	0.04	-	1.81	118.4%
Unallocated autoproducers	-	0.27	-	-	0.27	+
Other energy industry own use	-	0.04	-	-	0.04	71.4%
Manufacturing industries and construction	0.65	0.35	-	-	1.00	307.4%
Transport	-	2.09	-	-	2.09	189.7%
<i>of which: road</i>	-	1.97	-	-	1.97	197.6%
Other	-	0.46	-	-	0.46	56.6%
<i>of which: residential</i>	-	0.28	-	-	0.28	116.7%
Reference Approach	0.65	5.15	0.04	-	5.84	166.9%
Diff. due to losses and/or transformation	-	0.16	-	-	0.16	
Statistical differences	-	0.01	-	-	0.01	
<i>Memo: international marine bunkers</i>	-	0.21	-	-	0.21	83.9%
<i>Memo: international aviation bunkers</i>	-	0.64	-	-	0.64	41.7%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	1.97	197.6%	7.9	7.9
Main activity prod. elec. and heat - oil	1.77	117.5%	7.1	15.0
Manufacturing industries - coal/peat	0.65	x	2.6	17.7
Manufacturing industries - oil	0.35	41.7%	1.4	19.1
Residential - oil	0.28	116.7%	1.1	20.2
Unallocated autoproducers - oil	0.27	+	1.1	21.3
Non-specified other - oil	0.19	10.6%	0.7	22.0
Other transport - oil	0.13	105.3%	0.5	22.5
Other energy industry own use - oil	0.04	71.4%	0.2	22.7
<i>Memo: total CO₂ from fuel combustion</i>	<i>5.67</i>	<i>166.7%</i>	<i>22.8</i>	<i>22.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Serbia

Figure 1. CO₂ emissions by fuel

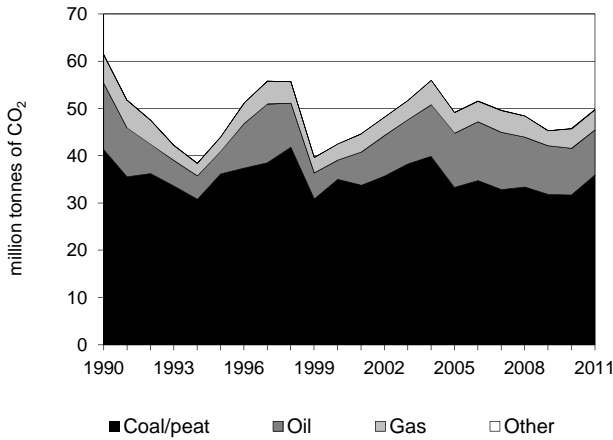


Figure 2. CO₂ emissions by sector

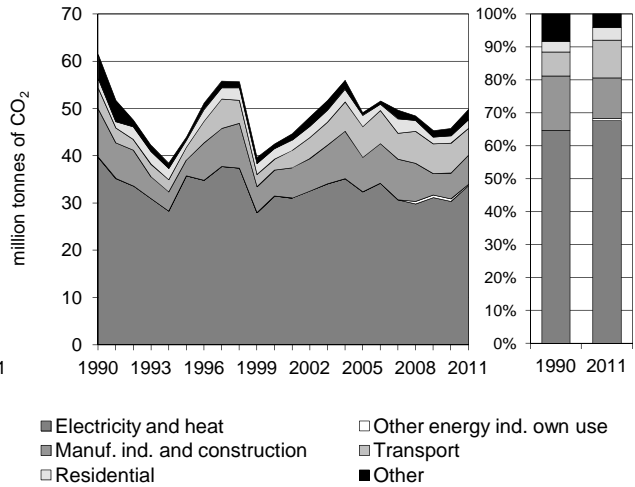


Figure 3. Reference vs Sectoral Approach

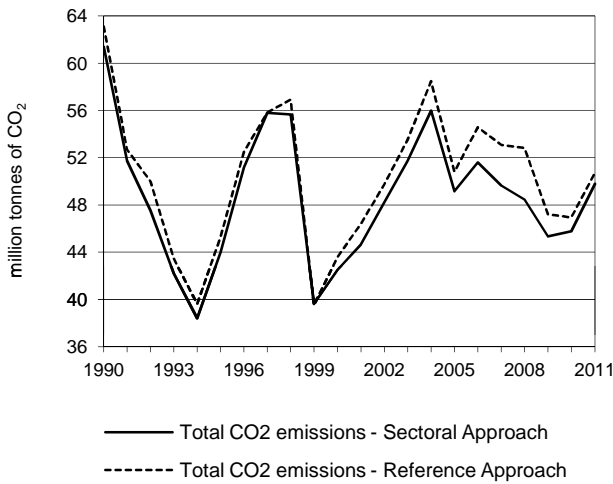


Figure 4. Electricity generation by fuel

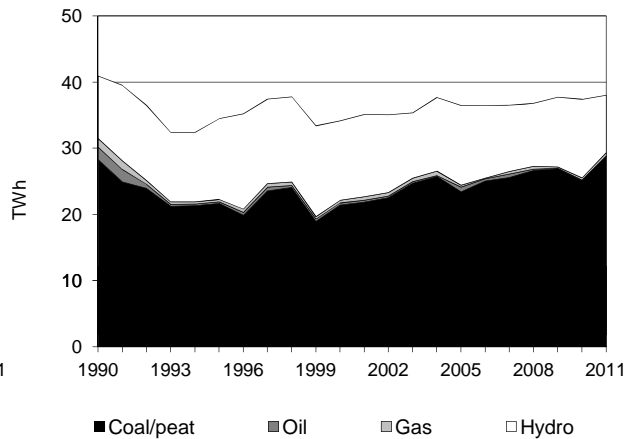


Figure 5. Changes in selected indicators *

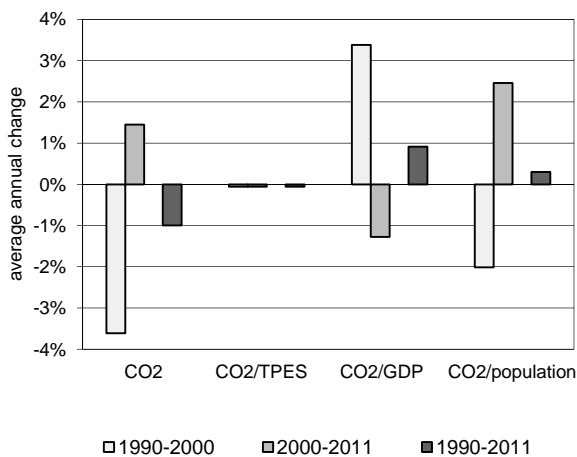
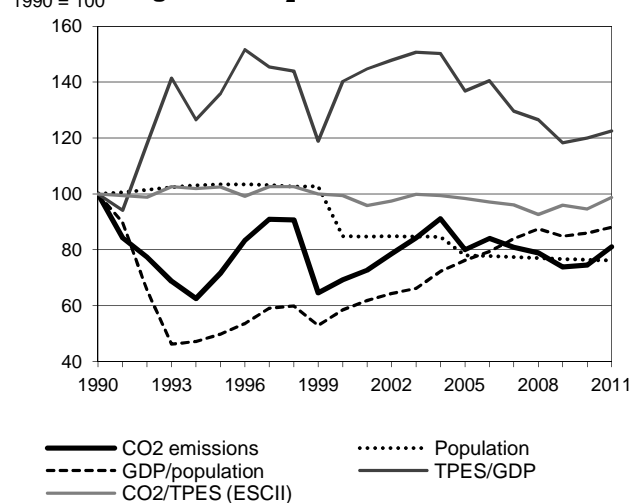


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Serbia *

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	61.40	43.99	42.51	49.15	45.33	45.78	49.78	-18.9%
TPES (PJ)	825	577	575	672	635	650	678	-17.9%
GDP (billion 2005 USD)	42.43	21.85	21.06	25.23	27.60	27.86	28.42	-33.0%
GDP PPP (billion 2005 USD)	106.55	54.86	52.90	63.37	69.32	69.98	71.38	-33.0%
Population (millions)	9.54	9.87	8.10	7.44	7.32	7.29	7.26	-23.9%
CO ₂ / TPES (tCO ₂ per TJ)	74.4	76.2	74.0	73.1	71.3	70.4	73.5	-1.3%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.45	2.01	2.02	1.95	1.64	1.64	1.75	21.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.58	0.80	0.80	0.78	0.65	0.65	0.70	21.0%
CO ₂ / population (tCO ₂ per capita)	6.43	4.46	5.25	6.61	6.19	6.28	6.86	6.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) **								
CO ₂ emissions	100	72	69	80	74	75	81	-18.9%
Population	100	103	85	78	77	76	76	-23.9%
GDP per population (GDP per capita)	100	50	59	76	85	86	88	-12.0%
Energy intensity (TPES/GDP)	100	136	140	137	118	120	123	22.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	102	99	98	96	95	99	-1.3%

* Data for Serbia include Montenegro until 2004 and Kosovo until 1999. ** Please see Part I, Chapter 1 for methodological notes. Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 90-11
Sectoral Approach	35.90	9.58	4.26	0.03	49.78	-18.9%
Main activity producer elec. and heat	29.66	0.54	1.34	0.03	31.57	-20.5%
Unallocated autoproducers	1.23	0.55	0.34	-	2.12	x
Other energy industry own use	-	0.18	0.10	-	0.28	x
Manufacturing industries and construction	2.70	1.71	1.73	-	6.15	-39.5%
Transport	-	5.71	0.01	-	5.72	29.2%
<i>of which: road</i>	-	5.19	0.01	-	5.20	17.5%
Other	2.31	0.90	0.73	-	3.94	-44.6%
<i>of which: residential</i>	1.18	0.19	0.50	-	1.86	-7.4%
Reference Approach	36.46	9.97	4.27	0.03	50.73	-19.6%
Diff. due to losses and/or transformation	0.38	0.35	0.01	-	0.73	
Statistical differences	0.18	0.04	-0.00	-	0.22	
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.14	-	-	0.14	-67.1%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	29.66	-20.8%	..	..
Road - oil	5.19	17.4%	..	..
Manufacturing industries - coal/peat	2.70	79.1%	..	..
Manufacturing industries - gas	1.73	-4.7%	..	..
Manufacturing industries - oil	1.71	-75.0%	..	..
Main activity prod. elec. and heat - gas	1.34	153.7%	..	..
Unallocated autoproducers - coal/peat	1.23	x	..	..
Residential - coal/peat	1.18	-36.6%	..	..
Non-specified other sectors - coal/peat	1.14	167.8%	..	..
<i>Memo: total CO₂ from fuel combustion</i>	<i>49.78</i>	<i>-18.9%</i>	<i>-</i>	<i>-</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Singapore

Figure 1. CO₂ emissions by fuel

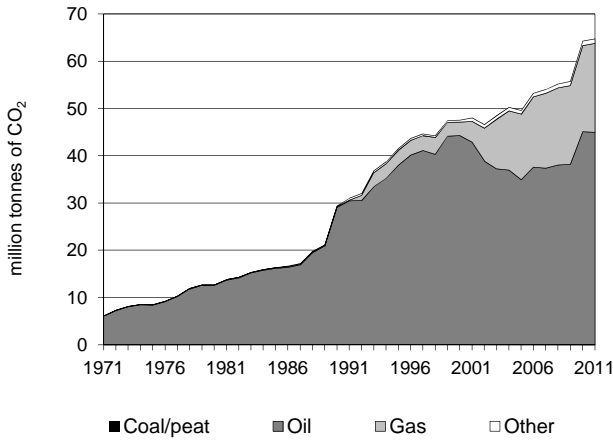


Figure 2. CO₂ emissions by sector

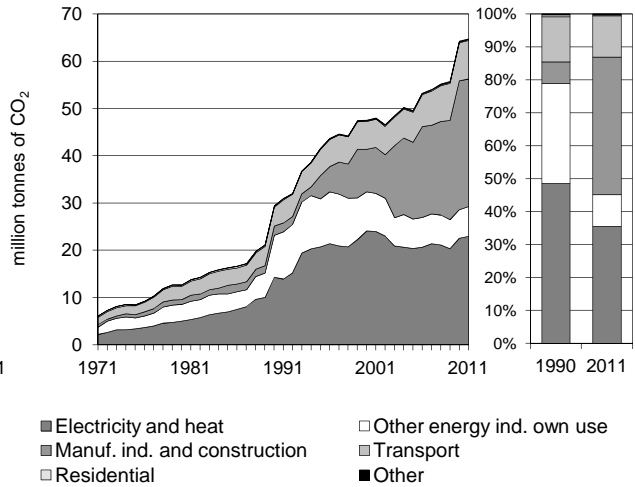


Figure 3. Reference vs Sectoral Approach

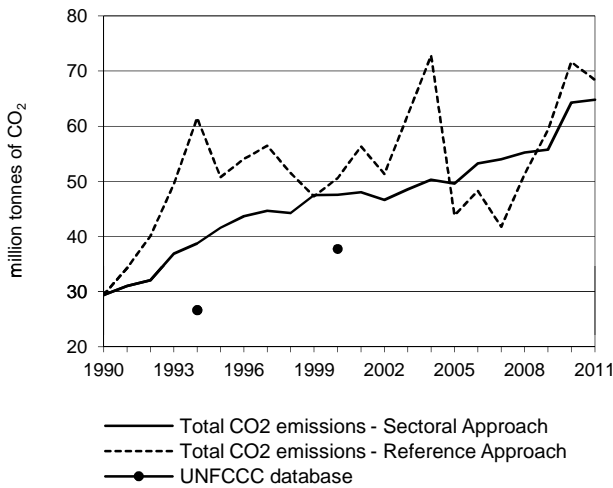


Figure 4. Electricity generation by fuel

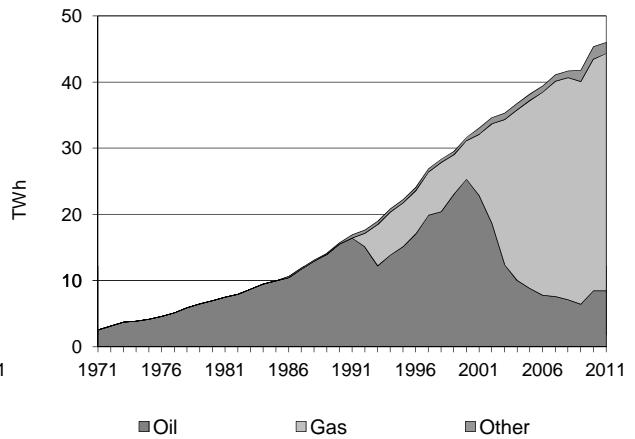


Figure 5. Changes in selected indicators *

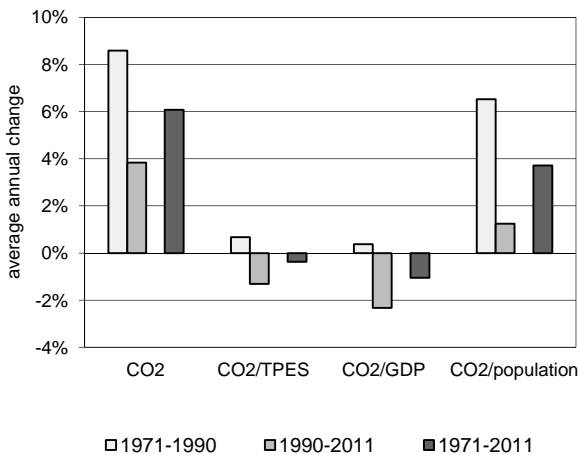
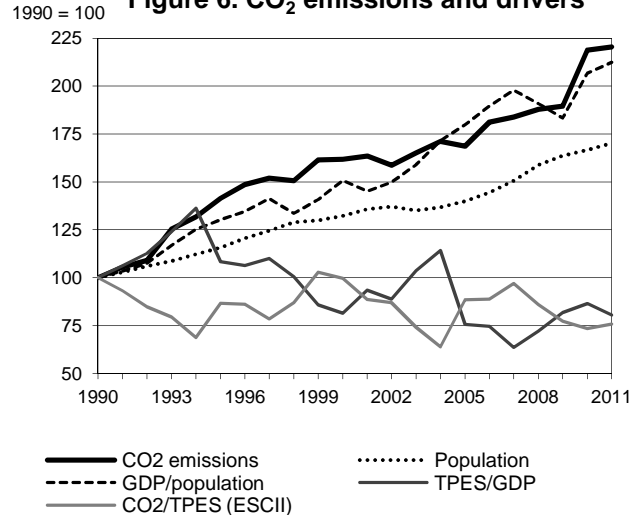


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Singapore

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	29.39	41.57	47.56	49.59	55.71	64.28	64.77	120.4%
TPES (PJ)	482	788	783	919	1 183	1 435	1 400	190.5%
GDP (billion 2005 USD)	49.06	73.94	97.83	123.51	147.26	169.00	177.26	261.3%
GDP PPP (billion 2005 USD)	76.89	115.88	153.31	193.56	230.78	264.85	277.80	261.3%
Population (millions)	3.05	3.53	4.03	4.27	4.99	5.08	5.18	70.1%
CO ₂ / TPES (tCO ₂ per TJ)	61.0	52.8	60.8	54.0	47.1	44.8	46.3	-24.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.60	0.56	0.49	0.40	0.38	0.38	0.37	-39.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.38	0.36	0.31	0.26	0.24	0.24	0.23	-39.0%
CO ₂ / population (tCO ₂ per capita)	9.65	11.79	11.81	11.62	11.17	12.66	12.49	29.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	141	162	169	190	219	220	120.4%
Population	100	116	132	140	164	167	170	70.1%
GDP per population (GDP per capita)	100	130	151	180	183	207	212	112.4%
Energy intensity (TPES/GDP)	100	108	81	76	82	86	80	-19.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	87	100	89	77	73	76	-24.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	44.99	18.84	0.94	64.77	120.4%
Main activity producer elec. and heat	-	6.05	15.33	0.94	22.32	58.1%
Unallocated autoproducers	-	0.05	0.62	-	0.67	332.1%
Other energy industry own use	-	6.25	-	-	6.25	-29.8%
Manufacturing industries and construction	-	24.50	2.52	-	27.02	+
Transport	-	8.08	0.06	-	8.13	102.1%
<i>of which: road</i>	-	8.08	0.06	-	8.13	102.1%
Other	-	0.07	0.31	-	0.38	47.6%
<i>of which: residential</i>	-	0.07	0.13	-	0.20	7.7%
Reference Approach	-	48.59	18.84	0.94	68.37	132.5%
Diff. due to losses and/or transformation	-	3.60	-	-	3.60	
Statistical differences	-	-	-	-	-	
<i>Memo: international marine bunkers</i>	-	133.02	-	-	133.02	292.8%
<i>Memo: international aviation bunkers</i>	-	18.33	-	-	18.33	225.5%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Manufacturing industries - oil	24.50	+	33.7	33.7
Main activity prod. elec. and heat - gas	15.33	x	21.1	54.7
Road - oil	8.08	100.6%	11.1	65.8
Other energy industry own use - oil	6.25	-29.8%	8.6	74.4
Main activity prod. elec. and heat - oil	6.05	-56.7%	8.3	82.7
Manufacturing industries - gas	2.52	x	3.5	86.2
Main activity prod. elec. and heat - other	0.94	609.4%	1.3	87.5
Unallocated autoproducers - gas	0.62	x	0.8	88.3
Non-specified other - gas	0.18	144.4%	0.3	88.6
<i>Memo: total CO₂ from fuel combustion</i>	<i>64.77</i>	<i>120.4%</i>	<i>89.0</i>	<i>89.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Slovak Republic

Figure 1. CO₂ emissions by fuel

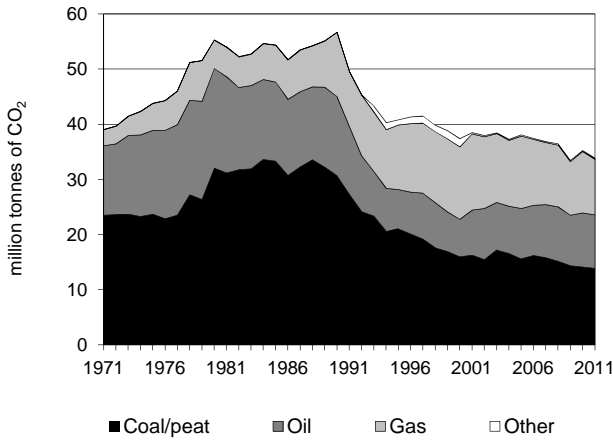


Figure 2. CO₂ emissions by sector

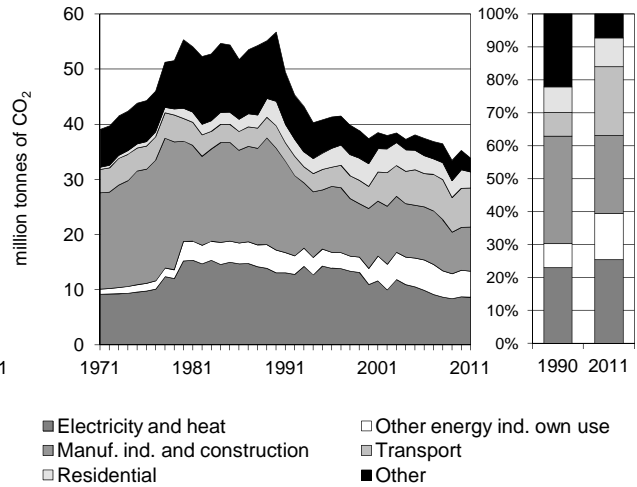


Figure 3. Reference vs Sectoral Approach

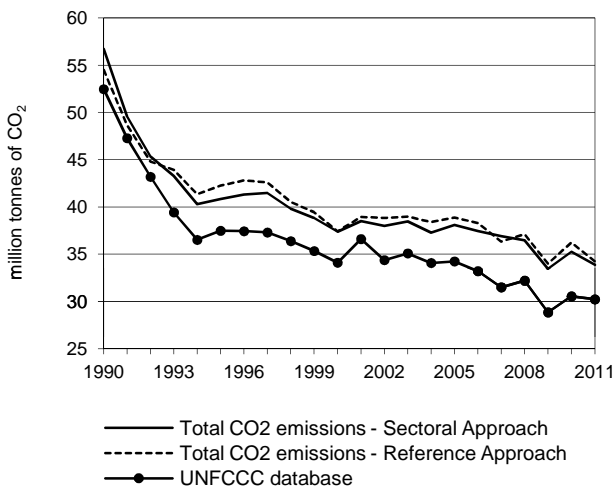


Figure 4. Electricity generation by fuel

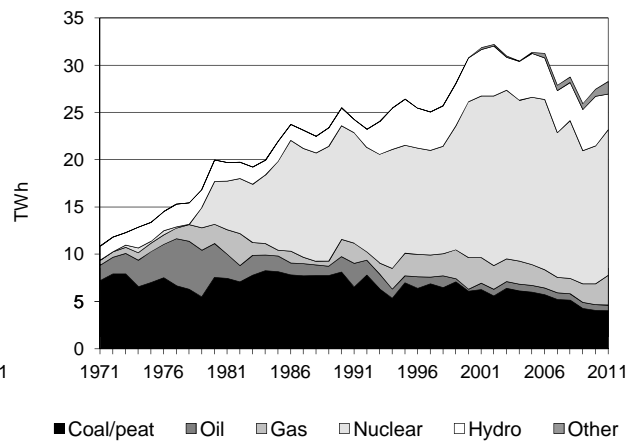


Figure 5. Changes in selected indicators *

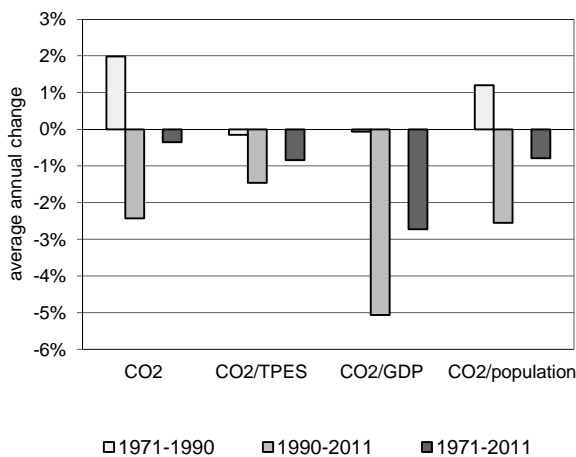
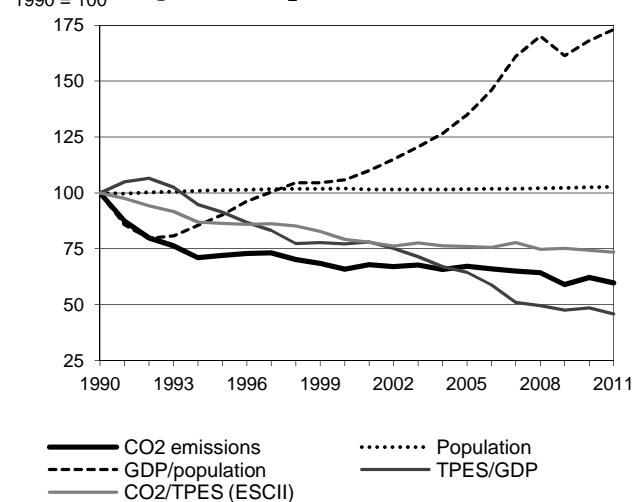


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Slovak Republic

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	56.73	40.83	37.37	38.10	33.46	35.24	33.86	-40.3%
TPES (PJ)	893	744	743	788	701	746	726	-18.7%
GDP (billion 2005 USD)	34.94	31.89	37.70	47.90	57.64	60.17	62.11	77.8%
GDP PPP (billion 2005 USD)	63.56	58.02	68.58	87.13	104.87	109.46	112.99	77.8%
Population (millions)	5.30	5.36	5.40	5.39	5.42	5.43	5.44	2.7%
CO ₂ / TPES (tCO ₂ per TJ)	63.5	54.9	50.3	48.3	47.8	47.2	46.6	-26.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.62	1.28	0.99	0.80	0.58	0.59	0.55	-66.4%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.89	0.70	0.55	0.44	0.32	0.32	0.30	-66.4%
CO ₂ / population (tCO ₂ per capita)	10.71	7.61	6.92	7.07	6.18	6.49	6.22	-41.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	72	66	67	59	62	60	-40.3%
Population	100	101	102	102	102	102	103	2.7%
GDP per population (GDP per capita)	100	90	106	135	161	168	173	73.1%
Energy intensity (TPES/GDP)	100	91	77	64	48	49	46	-54.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	86	79	76	75	74	73	-26.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	13.87	9.71	10.12	0.17	33.86	-40.3%
Main activity producer elec. and heat	4.62	0.86	2.15	0.00	7.62	-29.8%
Unallocated autoproducers	0.73	0.01	0.19	0.07	1.00	-54.6%
Other energy industry own use	2.82	1.58	0.33	-	4.74	14.8%
Manufacturing industries and construction	4.22	0.96	2.77	0.07	8.01	-56.7%
Transport	-	6.03	1.02	-	7.05	74.3%
<i>of which: road</i>	-	5.95	-	-	5.95	47.0%
Other	1.48	0.27	3.66	0.02	5.43	-68.0%
<i>of which: residential</i>	0.20	0.02	2.74	-	2.95	-33.5%
Reference Approach	14.45	9.06	10.54	0.18	34.23	-37.2%
Diff. due to losses and/or transformation	0.38	-0.65	0.42	0.01	0.16	
Statistical differences	0.21	-0.00	0.00	0.00	0.21	
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	0.13	-	-	0.13	x

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	5.95	47.0%	12.2	12.2
Main activity prod. elec. and heat - coal/peat	4.62	-43.4%	9.4	21.6
Manufacturing industries - coal/peat	4.22	-49.5%	8.6	30.2
Other energy industry - coal/peat	2.82	-17.3%	5.8	36.0
Manufacturing industries - gas	2.77	-11.2%	5.7	41.6
Residential - gas	2.74	7.5%	5.6	47.2
Main activity prod. elec. and heat - gas	2.15	4.7%	4.4	51.6
Other energy industry own use - oil	1.58	252.9%	3.2	54.8
Non-specified other sectors - coal/peat	1.28	-82.4%	2.6	57.5
<i>Memo: total CO₂ from fuel combustion</i>	33.86	-40.3%	69.2	69.2

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Slovenia

Figure 1. CO₂ emissions by fuel

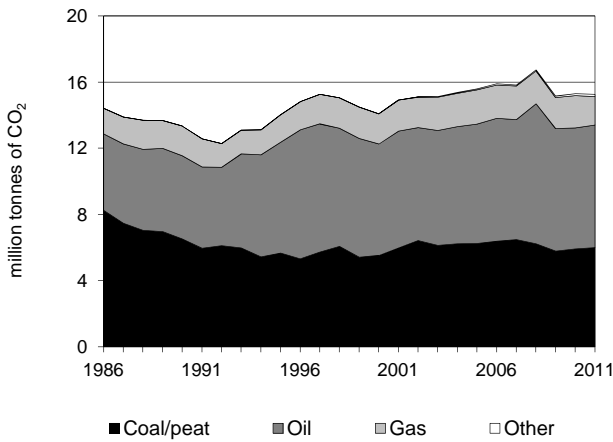


Figure 2. CO₂ emissions by sector

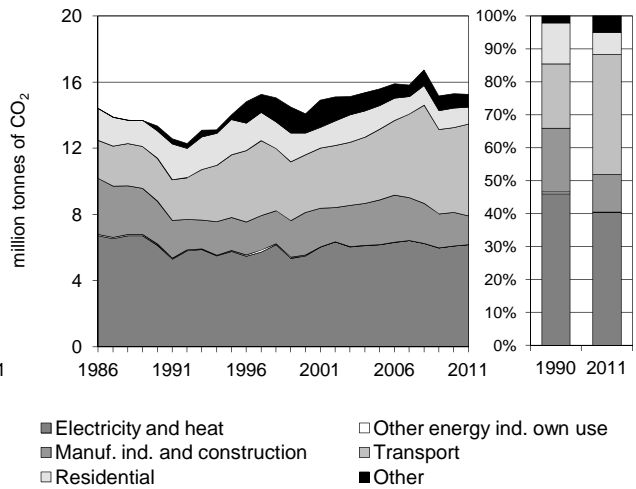


Figure 3. Reference vs Sectoral Approach

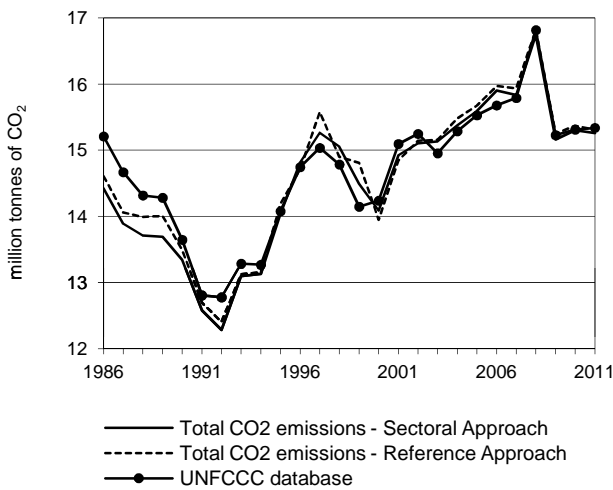


Figure 4. Electricity generation by fuel

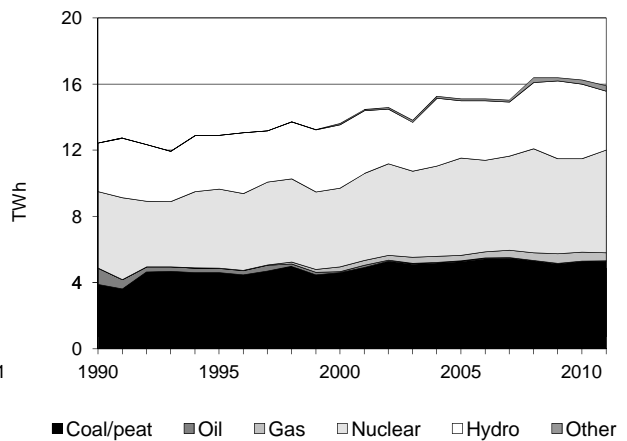


Figure 5. Changes in selected indicators *

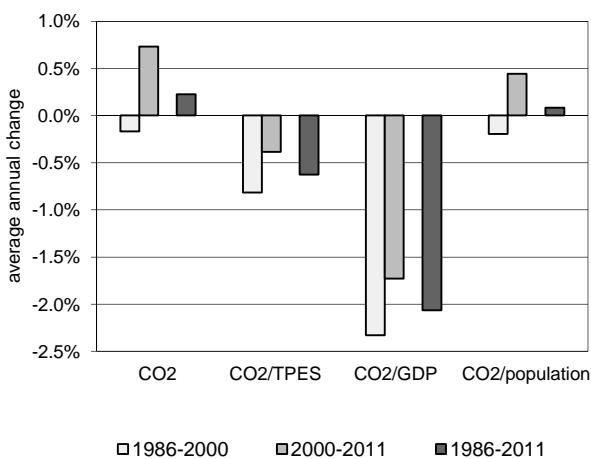
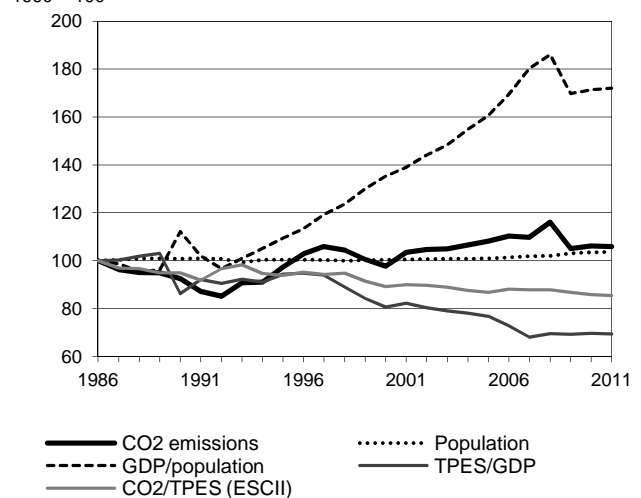


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Slovenia *

Key indicators

	1986	1990	1995	2005	2009	2010	2011	% change 86-11
CO ₂ Sectoral Approach (MtCO ₂)	14.42e	13.35	14.03	15.59	15.16	15.30	15.26	5.8%
TPES (PJ)	245e	239	254	305	297	303	303	23.8%
GDP (billion 2005 USD)	23.87e	24.90	24.18	35.72	38.53	39.01	39.24	64.4%
GDP PPP (billion 2005 USD)	28.94e	32.73	31.79	46.96	50.66	51.29	51.59	78.3%
Population (millions)	1.98e	2.00	1.99	2.00	2.04	2.05	2.05	3.6%
CO ₂ / TPES (tCO ₂ per TJ)	58.8e	55.8	55.2	51.1	51.0	50.5	50.3	-14.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.6e	0.54	0.58	0.44	0.39	0.39	0.39	-35.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.5e	0.41	0.44	0.33	0.30	0.30	0.30	-40.6%
CO ₂ / population (tCO ₂ per capita)	7.28e	6.68	7.06	7.79	7.43	7.47	7.43	2.1%
CO₂ emissions and drivers - Kaya decomposition (1986=100) **								
CO ₂ emissions	100	93	97	108	105	106	106	5.8%
Population	100	101	100	101	103	103	104	3.6%
GDP per population (GDP per capita)	100	112	109	161	170	171	172	72.0%
Energy intensity (TPES/GDP)	100	86	94	77	69	70	69	-30.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	94	87	87	86	85	-14.5%

* Under the Convention Slovenia is allowed to use 1986 as the base year. ** Please see Part I, Chapter 1 for methodological notes. Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 86-11
Sectoral Approach	6.00	7.41	1.72	0.13	15.26	5.8%
Main activity producer elec. and heat	5.72	0.02	0.33	0.03	6.11	4.7%
Unallocated autoproducers	0.04	-	0.02	0.00	0.06	-92.8%
Other energy industry own use	-	-	0.00	-	0.00	-93.4%
Manufacturing industries and construction	0.24	0.40	1.00	0.10	1.74	-48.8%
Transport	-	5.55	-	-	5.55	141.2%
<i>of which: road</i>	-	5.51	-	-	5.51	143.1%
Other	-	1.44	0.36	-	1.79	-7.0%
<i>of which: residential</i>	-	0.76	0.26	-	1.02	-46.8%
Reference Approach	6.05	7.41	1.72	0.13	15.31	4.8%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	0.05	0.00	0.00	-	0.05	-
<i>Memo: international marine bunkers</i>	-	0.10	-	-	0.10	..
<i>Memo: international aviation bunkers</i>	-	0.07	-	-	0.07	-28.1%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 86-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	5.72	0.4%	29.4	29.4
Road - oil	5.51	143.1%	28.3	57.8
Manufacturing industries - gas	1.00	-11.6%	5.2	62.9
Residential - oil	0.76	11.6%	3.9	66.8
Non-specified other - oil	0.68	x	3.5	70.3
Manufacturing industries - oil	0.40	-62.8%	2.0	72.4
Main activity prod. elec. and heat - gas	0.33	613.3%	1.7	74.1
Residential - gas	0.26	655.8%	1.4	75.5
Manufacturing industries - coal/peat	0.24	-80.1%	1.2	76.7
<i>Memo: total CO₂ from fuel combustion</i>	<i>15.26</i>	<i>5.8%</i>	<i>78.5</i>	<i>78.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

South Africa

Figure 1. CO₂ emissions by fuel

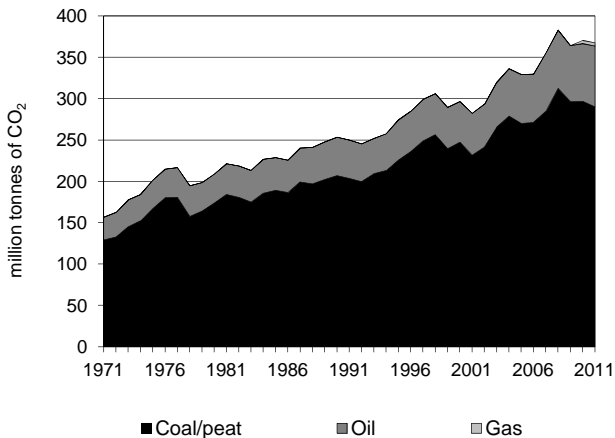


Figure 2. CO₂ emissions by sector

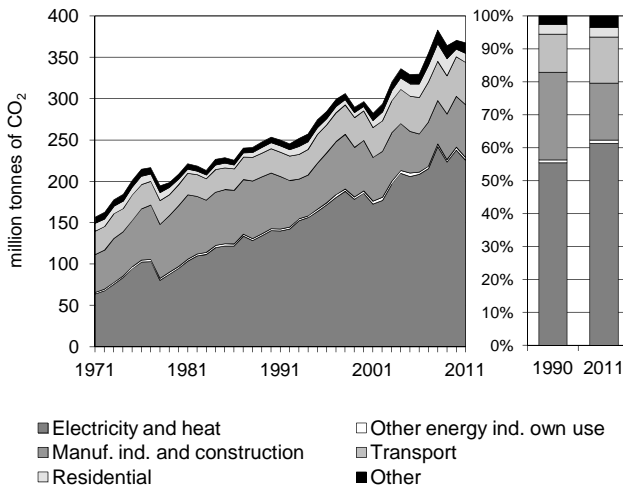


Figure 3. Reference vs Sectoral Approach

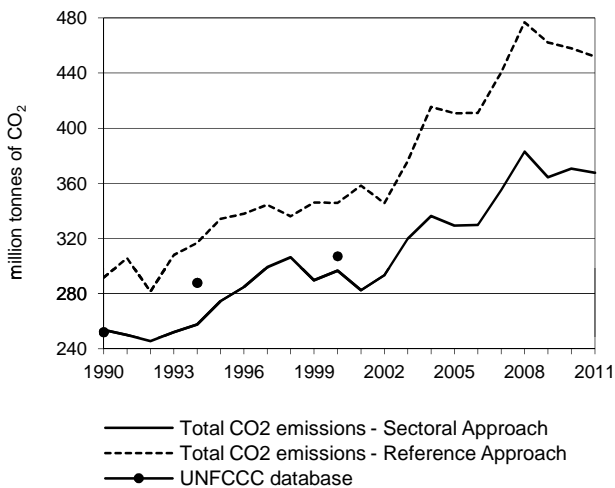


Figure 4. Electricity generation by fuel

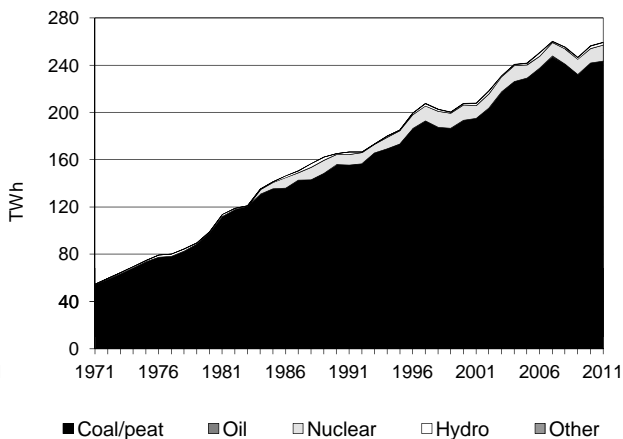


Figure 5. Changes in selected indicators *

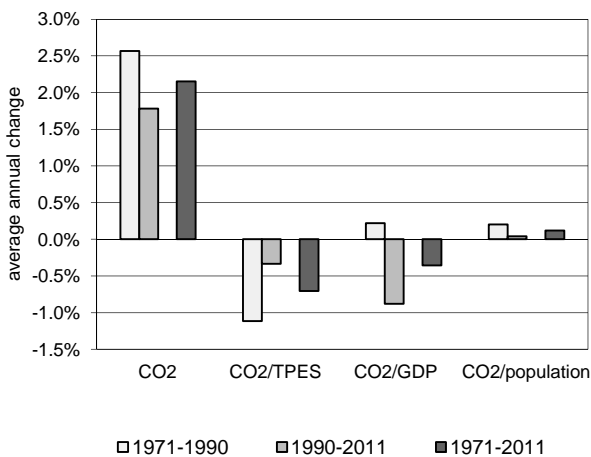
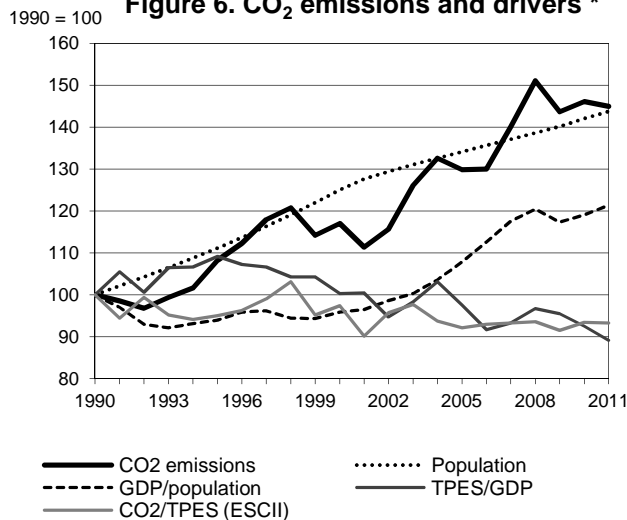


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

South Africa

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	253.65	274.49	296.65	329.22	364.31	370.60	367.60	44.9%
TPES (PJ)	3 808	4 337	4 575	5 368	5 977	5 957	5 919	55.4%
GDP (billion 2005 USD)	170.91	178.41	204.70	247.05	280.95	289.07	298.09	74.4%
GDP PPP (billion 2005 USD)	280.71	293.02	336.20	405.76	461.43	474.76	489.59	74.4%
Population (millions)	35.20	39.12	44.00	47.20	49.32	49.99	50.59	43.7%
CO ₂ / TPES (tCO ₂ per TJ)	66.6	63.3	64.8	61.3	61.0	62.2	62.1	-6.8%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.48	1.54	1.45	1.33	1.30	1.28	1.23	-16.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.90	0.94	0.88	0.81	0.79	0.78	0.75	-16.9%
CO ₂ / population (tCO ₂ per capita)	7.21	7.02	6.74	6.98	7.39	7.41	7.27	0.8%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	108	117	130	144	146	145	44.9%
Population	100	111	125	134	140	142	144	43.7%
GDP per population (GDP per capita)	100	94	96	108	117	119	121	21.4%
Energy intensity (TPES/GDP)	100	109	100	98	95	92	89	-10.9%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	97	92	92	93	93	-6.8%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	290.25	73.54	3.81	-	367.60	44.9%
Main activity producer elec. and heat	216.25	0.15	-	-	216.39	63.9%
Unallocated autoproducers	9.30	-	-	-	9.30	8.5%
Other energy industry own use	-	3.36	-	-	3.36	43.4%
Manufacturing industries and construction	48.44	11.48	3.81	-	63.73	-5.4%
Transport	-	51.16	-	-	51.16	74.9%
<i>of which: road</i>	-	47.77	-	-	47.77	71.0%
Other	16.27	7.39	-	-	23.66	67.7%
<i>of which: residential</i>	8.90	1.98	-	-	10.88	43.6%
Reference Approach	381.89	61.18	8.87	-	451.94	55.0%
Diff. due to losses and/or transformation	79.94	- 12.70	5.06	-	72.29	
Statistical differences	11.71	0.34	- 0.00	-	12.05	
<i>Memo: international marine bunkers</i>	-	9.54	-	-	9.54	60.3%
<i>Memo: international aviation bunkers</i>	-	2.54	-	-	2.54	132.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	216.25	63.8%	45.5	45.5
Manufacturing industries - coal/peat	48.44	-15.0%	10.2	55.7
Road - oil	47.77	71.0%	10.0	65.7
Manufacturing industries - oil	11.48	10.9%	2.4	68.1
Unallocated autoproducers - coal/peat	9.30	8.5%	2.0	70.1
Residential - coal/peat	8.90	54.6%	1.9	71.9
Non-specified other sectors - coal/peat	7.37	100.8%	1.6	73.5
Non-specified other - oil	5.41	88.7%	1.1	74.6
Manufacturing industries - gas	3.81	x	0.8	75.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>367.60</i>	<i>44.9%</i>	<i>77.3</i>	<i>77.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Spain

Figure 1. CO₂ emissions by fuel

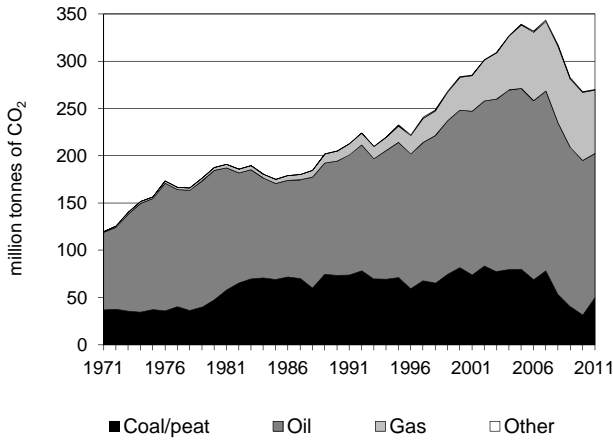


Figure 2. CO₂ emissions by sector

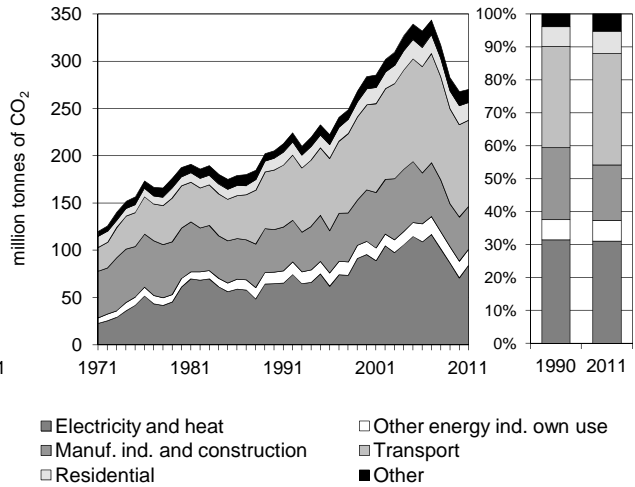


Figure 3. Reference vs Sectoral Approach

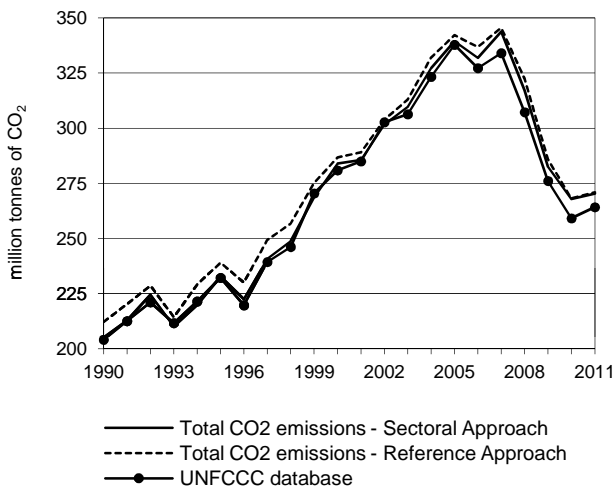


Figure 4. Electricity generation by fuel

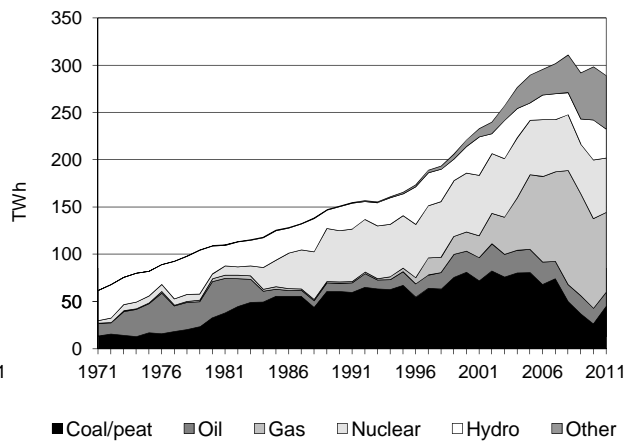


Figure 5. Changes in selected indicators *

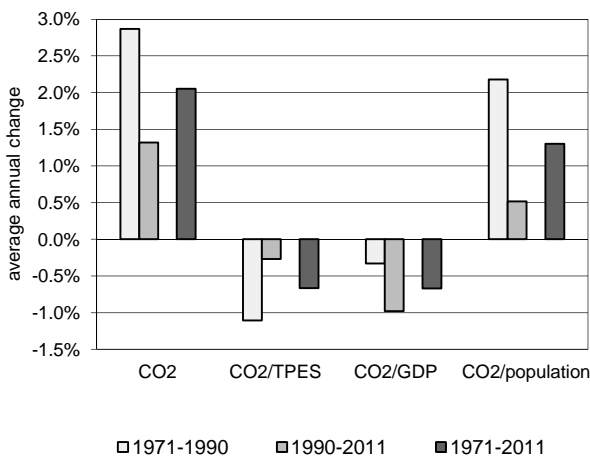
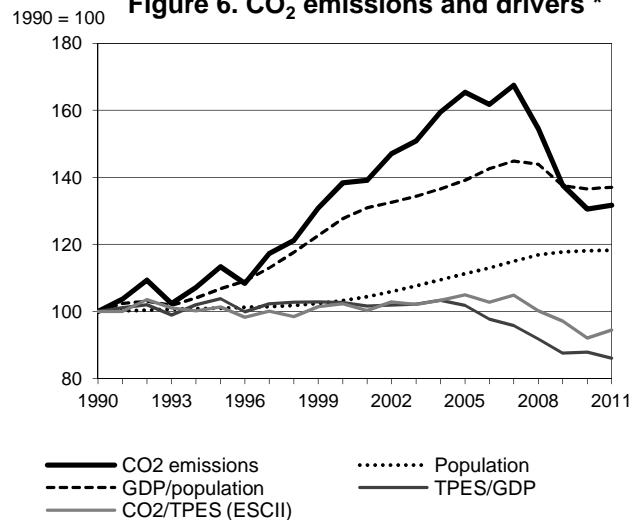


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Spain

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	205.22	232.69	283.92	339.44	282.49	267.92	270.32	31.7%
TPES (PJ)	3 772	4 220	5 102	5 942	5 348	5 349	5 257	39.4%
GDP (billion 2005 USD)	730.87	787.61	963.13	1 130.80	1 182.69	1 178.90	1 183.83	62.0%
GDP PPP (billion 2005 USD)	768.33	827.99	1 012.50	1 188.76	1 243.31	1 239.34	1 244.51	62.0%
Population (millions)	39.01	39.39	40.26	43.40	45.93	46.07	46.13	18.2%
CO ₂ / TPES (tCO ₂ per TJ)	54.4	55.1	55.6	57.1	52.8	50.1	51.4	-5.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.28	0.30	0.29	0.30	0.24	0.23	0.23	-18.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.27	0.28	0.28	0.29	0.23	0.22	0.22	-18.7%
CO ₂ / population (tCO ₂ per capita)	5.26	5.91	7.05	7.82	6.15	5.82	5.86	11.4%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	113	138	165	138	131	132	31.7%
Population	100	101	103	111	118	118	118	18.2%
GDP per population (GDP per capita)	100	107	128	139	137	137	137	37.0%
Energy intensity (TPES/GDP)	100	104	103	102	88	88	86	-13.9%
Carbon intensity: ESCII (CO ₂ /TPES)	100	101	102	105	97	92	95	-5.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	49.98	152.65	66.90	0.79	270.32	31.7%
Main activity producer elec. and heat	42.73	9.29	18.77	0.18	70.98	13.4%
Unallocated autoproducers	0.46	1.16	10.91	0.61	13.14	551.8%
Other energy industry own use	1.08	12.41	3.50	-	16.99	36.6%
Manufacturing industries and construction	5.02	21.70	18.60	-	45.31	1.0%
Transport	-	91.07	0.22	-	91.28	45.0%
<i>of which: road</i>	-	80.36	0.08	-	80.44	52.5%
Other	0.70	17.02	14.90	-	32.62	60.1%
<i>of which: residential</i>	0.41	8.33	9.78	-	18.51	48.2%
Reference Approach	48.21	154.53	67.36	0.79	270.90	27.7%
Diff. due to losses and/or transformation	0.89	2.14	0.38	-	3.41	
Statistical differences	- 2.65	- 0.27	0.08	-	- 2.84	
<i>Memo: international marine bunkers</i>	-	27.14	-	-	27.14	136.8%
<i>Memo: international aviation bunkers</i>	-	10.80	-	-	10.80	225.2%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	80.36	52.3%	22.5	22.5
Main activity prod. elec. and heat - coal/peat	42.73	-23.9%	12.0	34.5
Manufacturing industries - oil	21.70	-6.7%	6.1	40.6
Main activity prod. elec. and heat - gas	18.77	+	5.3	45.9
Manufacturing industries - gas	18.60	118.2%	5.2	51.1
Other energy industry own use - oil	12.41	17.7%	3.5	54.6
Unallocated autoproducers - gas	10.91	+	3.1	57.6
Other transport - oil	10.70	5.1%	3.0	60.6
Residential - gas	9.78	979.1%	2.7	63.4
<i>Memo: total CO₂ from fuel combustion</i>	<i>270.32</i>	<i>31.7%</i>	<i>75.8</i>	<i>75.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Sri Lanka

Figure 1. CO₂ emissions by fuel

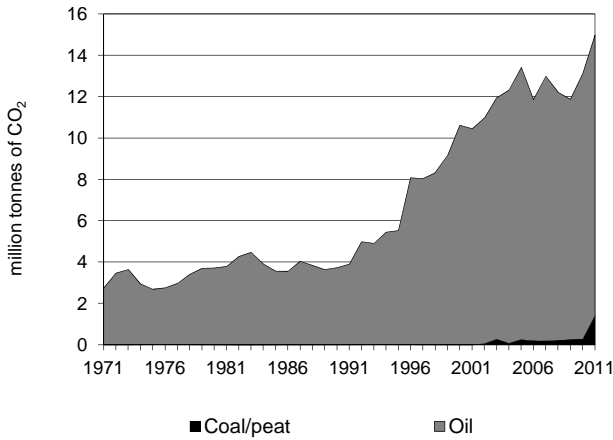


Figure 2. CO₂ emissions by sector

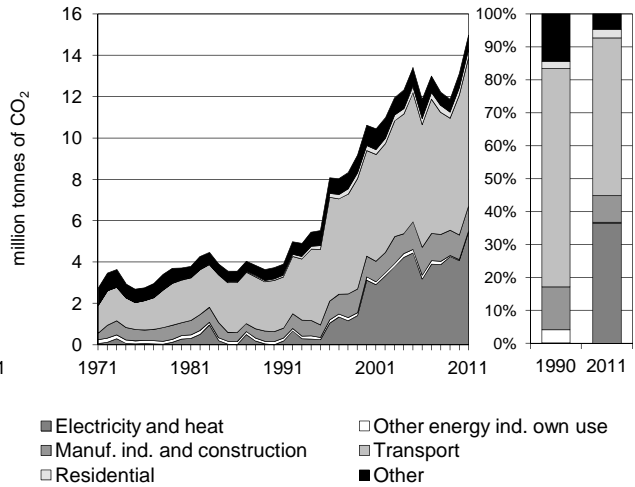


Figure 3. Reference vs Sectoral Approach

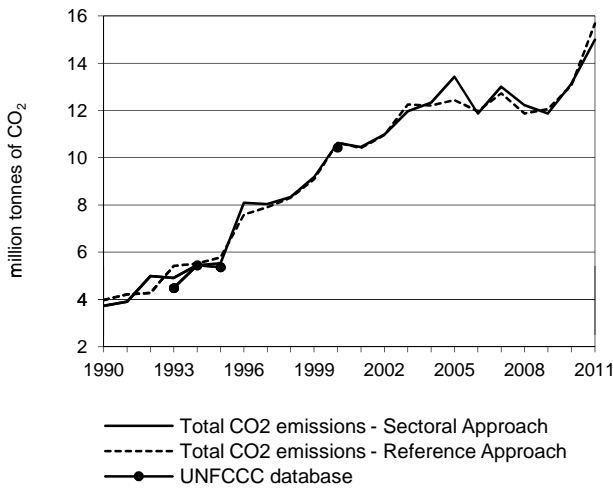


Figure 4. Electricity generation by fuel

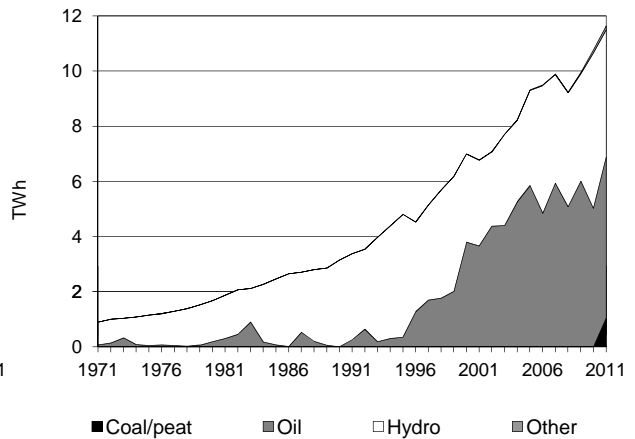


Figure 5. Changes in selected indicators *

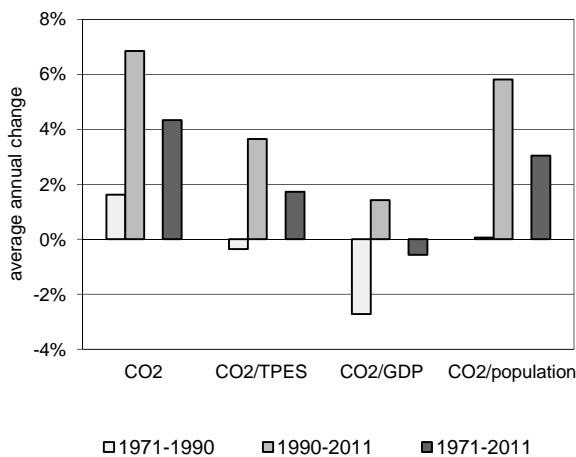
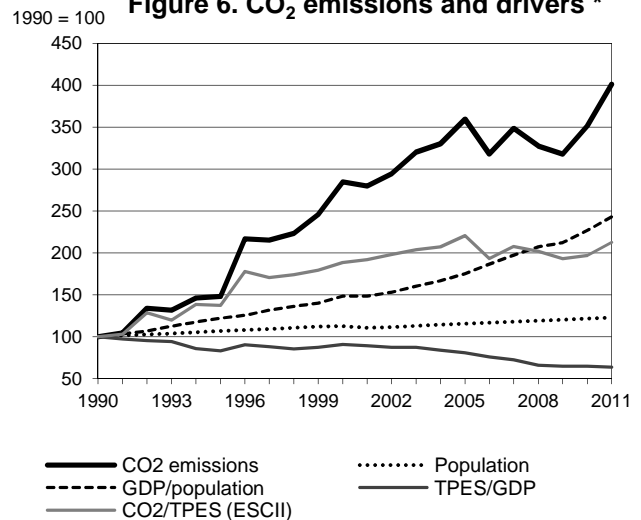


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Sri Lanka

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	3.73	5.53	10.62	13.42	11.87	13.12	14.98	301.2%
TPES (PJ)	231	249	349	377	380	412	436	88.9%
GDP (billion 2005 USD)	12.08	15.71	20.09	24.41	30.79	33.25	36.00	197.9%
GDP PPP (billion 2005 USD)	34.53	44.90	57.41	69.74	87.97	95.02	102.86	197.9%
Population (millions)	17.02	18.14	19.10	19.64	20.45	20.65	20.87	22.7%
CO ₂ / TPES (tCO ₂ per TJ)	16.2	22.2	30.5	35.6	31.2	31.8	34.3	112.4%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.31	0.35	0.53	0.55	0.39	0.39	0.42	34.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.11	0.12	0.19	0.19	0.13	0.14	0.15	34.7%
CO ₂ / population (tCO ₂ per capita)	0.22	0.30	0.56	0.68	0.58	0.64	0.72	227.0%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	148	285	359	318	351	401	301.2%
Population	100	107	112	115	120	121	123	22.7%
GDP per population (GDP per capita)	100	122	148	175	212	227	243	142.9%
Energy intensity (TPES/GDP)	100	83	91	81	65	65	63	-36.6%
Carbon intensity: ESCII (CO ₂ /TPES)	100	137	188	220	193	197	212	112.4%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	1.39	13.59	-	-	14.98	301.2%
Main activity producer elec. and heat	1.07	4.39	-	-	5.46	+
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	0.05	-	-	0.05	-65.9%
Manufacturing industries and construction	0.22	0.99	-	-	1.20	147.0%
Transport	0.10	7.08	-	-	7.18	190.5%
<i>of which: road</i>	-	6.97	-	-	6.97	216.8%
Other	-	1.08	-	-	1.08	74.7%
<i>of which: residential</i>	-	0.39	-	-	0.39	372.5%
Reference Approach	1.48	14.20	-	-	15.68	294.3%
Diff. due to losses and/or transformation	-	0.26	-	-	0.26	
Statistical differences	0.09	0.35	-	-	0.44	
<i>Memo: international marine bunkers</i>	-	0.62	-	-	0.62	-48.8%
<i>Memo: international aviation bunkers</i>	-	0.96	-	-	0.96	x

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	6.97	216.8%	23.4	23.4
Main activity prod. elec. and heat - oil	4.39	+	14.7	38.1
Main activity prod. elec. and heat - coal/peat	1.07	x	3.6	41.7
Manufacturing industries - oil	0.99	110.7%	3.3	45.0
Non-specified other - oil	0.69	28.9%	2.3	47.4
Residential - oil	0.39	372.5%	1.3	48.7
Manufacturing industries - coal/peat	0.22	+	0.7	49.4
Other transport - oil	0.11	-60.7%	0.4	49.8
Other transport - coal/peat	0.10	x	0.3	50.1
<i>Memo: total CO₂ from fuel combustion</i>	<i>14.98</i>	<i>301.2%</i>	<i>50.3</i>	<i>50.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Sudan

Figure 1. CO₂ emissions by fuel

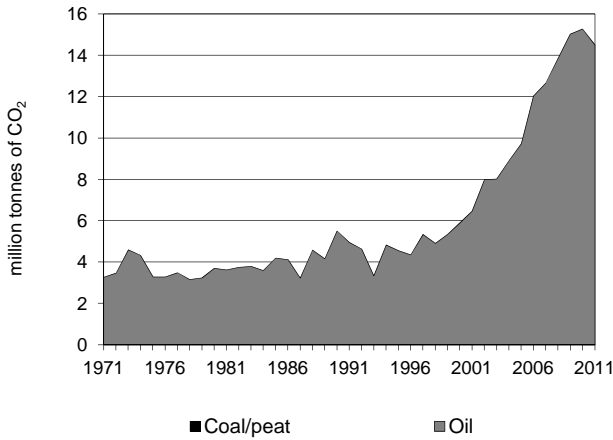


Figure 2. CO₂ emissions by sector

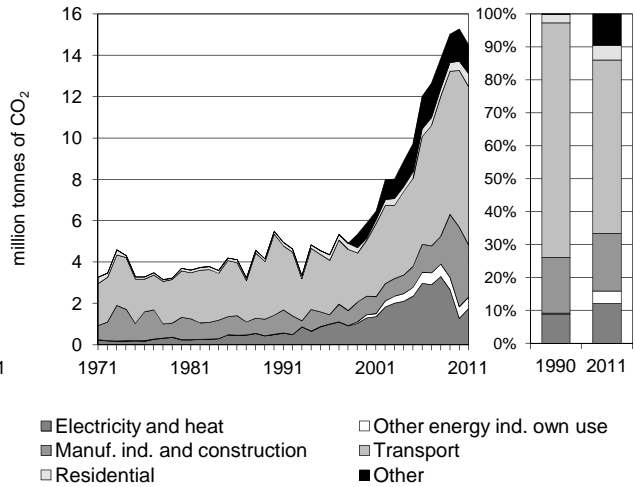


Figure 3. Reference vs Sectoral Approach

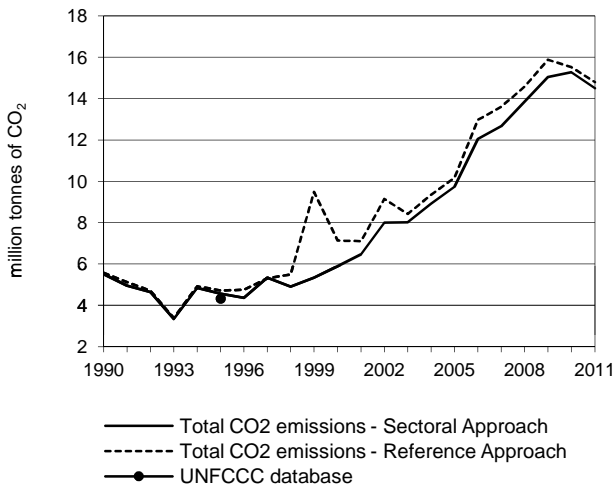


Figure 4. Electricity generation by fuel

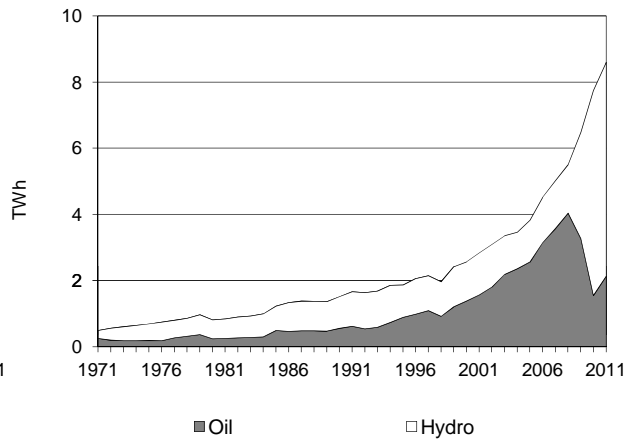


Figure 5. Changes in selected indicators *

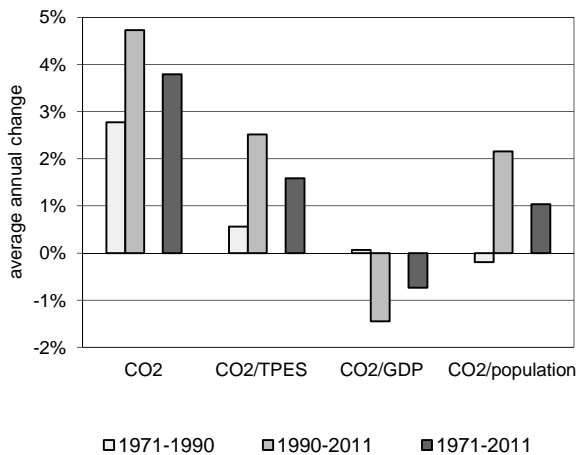
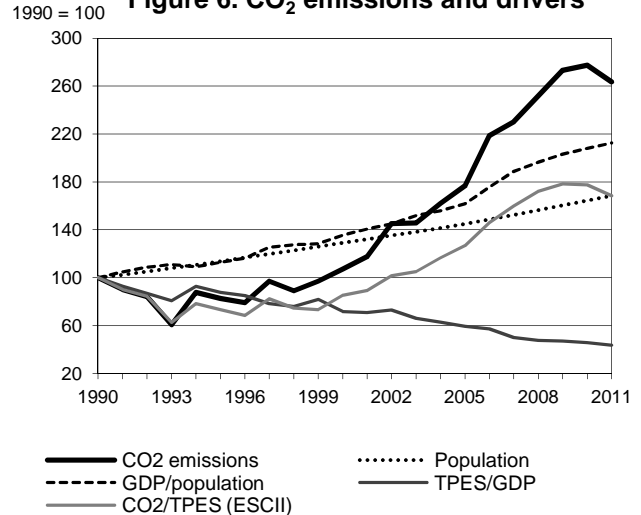


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Sudan *

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	5.50	4.56	5.90	9.73	15.04	15.27	14.51	163.6%
TPES (PJ)	445	502	559	621	682	695	696	56.4%
GDP (billion 2005 USD)	11.31	14.51	19.80	26.53	36.82	38.69	40.51	258.2%
GDP PPP (billion 2005 USD)	25.58	32.82	44.80	60.01	83.30	87.52	91.65	258.2%
Population (millions)	26.49	30.14	34.19	38.41	42.48	43.55	44.63	68.5%
CO ₂ / TPES (tCO ₂ per TJ)	12.4	9.1	10.6	15.7	22.0	22.0	20.8	68.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.49	0.31	0.30	0.37	0.41	0.39	0.36	-26.4%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.22	0.14	0.13	0.16	0.18	0.17	0.16	-26.4%
CO ₂ / population (tCO ₂ per capita)	0.21	0.15	0.17	0.25	0.35	0.35	0.33	56.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) **								
CO ₂ emissions	100	83	107	177	273	278	264	163.6%
Population	100	114	129	145	160	164	168	68.5%
GDP per population (GDP per capita)	100	113	136	162	203	208	213	112.7%
Energy intensity (TPES/GDP)	100	88	72	60	47	46	44	-56.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	73	85	127	178	178	169	68.6%

* Data for Sudan include South Sudan. ** Please see Part I, Chapter 1 for methodological notes. Based on GDP PPP.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other ***	Total	% change 90-11
Sectoral Approach	-	14.51	-	-	14.51	163.6%
Main activity producer elec. and heat	-	1.76	-	-	1.76	257.0%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	0.55	-	-	0.55	+
Manufacturing industries and construction	-	2.53	-	-	2.53	172.6%
Transport	-	7.63	-	-	7.63	94.6%
<i>of which: road</i>	-	7.56	-	-	7.56	92.8%
Other	-	2.03	-	-	2.03	+
<i>of which: residential</i>	-	0.64	-	-	0.64	356.8%
Reference Approach	-	14.80	-	-	14.80	165.5%
Diff. due to losses and/or transformation	-	0.30	-	-	0.30	
Statistical differences	-	-	-	-	-	
<i>Memo: international marine bunkers</i>	-	0.07	-	-	0.07	200.0%
<i>Memo: international aviation bunkers</i>	-	0.97	-	-	0.97	925.1%

*** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	7.56	92.8%	3.8	3.8
Manufacturing industries - oil	2.53	172.6%	1.3	5.1
Main activity prod. elec. and heat - oil	1.76	257.0%	0.9	6.0
Non-specified other - oil	1.38	+	0.7	6.7
Residential - oil	0.64	356.8%	0.3	7.0
Other energy industry own use - oil	0.55	+	0.3	7.3
Other transport - oil	0.07	x	0.0	7.3
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>14.51</i>	<i>163.6%</i>	<i>7.3</i>	<i>7.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Sweden

Figure 1. CO₂ emissions by fuel

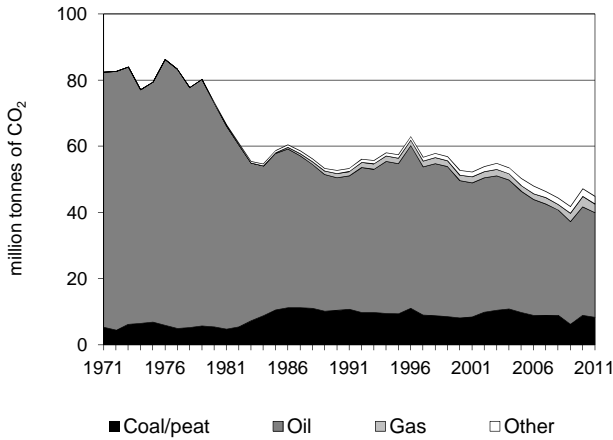


Figure 2. CO₂ emissions by sector

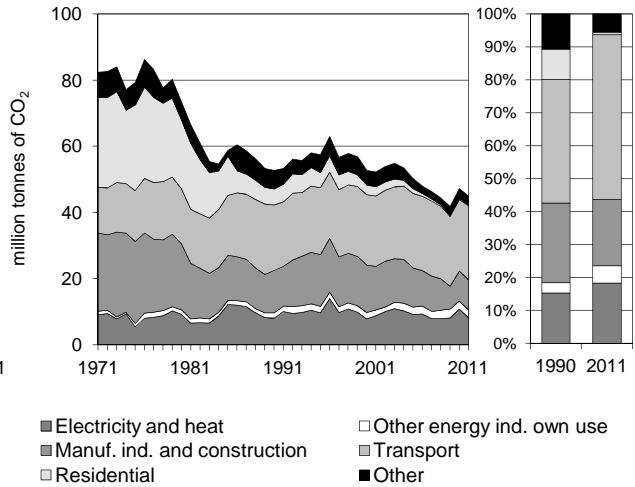


Figure 3. Reference vs Sectoral Approach

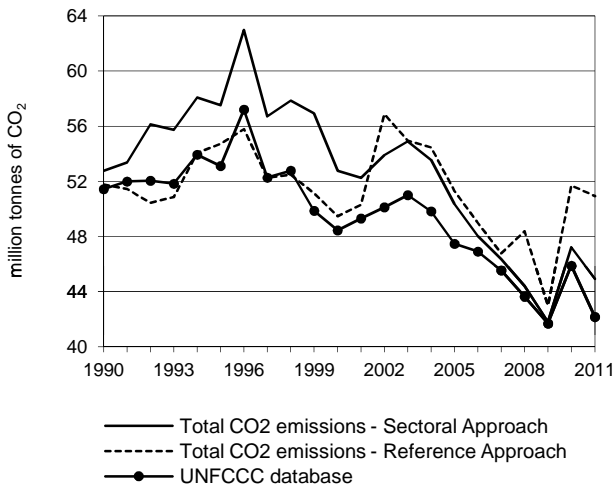


Figure 4. Electricity generation by fuel

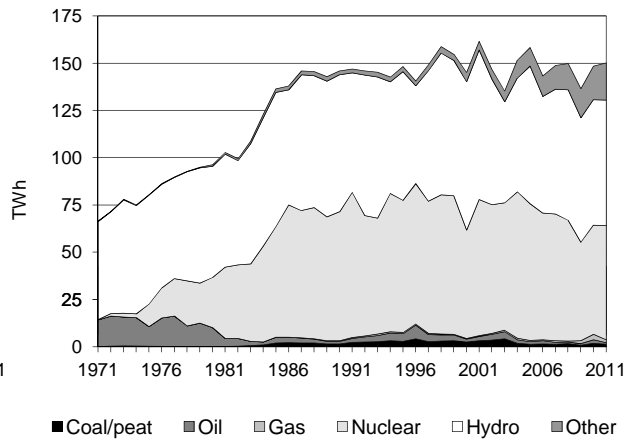


Figure 5. Changes in selected indicators *

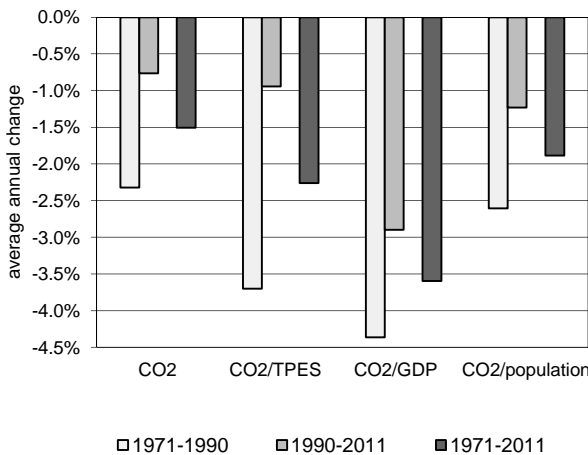
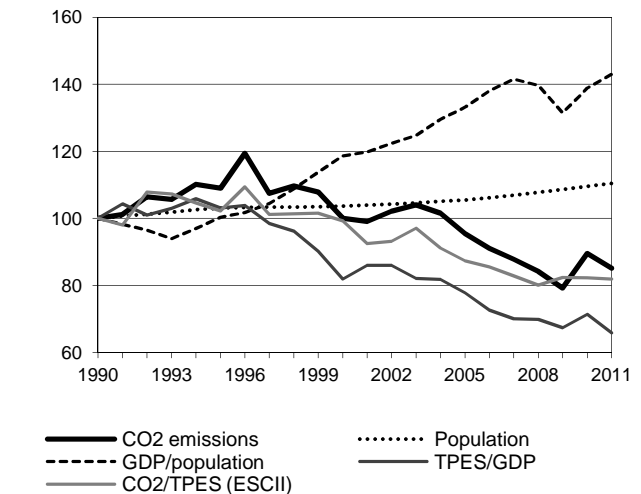


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Sweden

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	52.75	57.52	52.76	50.34	41.79	47.21	44.90	-14.9%
TPES (PJ)	1 976	2 107	1 991	2 159	1 901	2 148	2 053	3.9%
GDP (billion 2005 USD)	263.88	272.95	324.51	370.58	376.91	401.62	416.51	57.8%
GDP PPP (billion 2005 USD)	210.27	217.50	258.58	295.29	300.34	320.03	331.89	57.8%
Population (millions)	8.56	8.83	8.87	9.03	9.30	9.38	9.45	10.4%
CO ₂ / TPES (tCO ₂ per TJ)	26.7	27.3	26.5	23.3	22.0	22.0	21.9	-18.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.20	0.21	0.16	0.14	0.11	0.12	0.11	-46.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.25	0.26	0.20	0.17	0.14	0.15	0.14	-46.1%
CO ₂ / population (tCO ₂ per capita)	6.16	6.52	5.95	5.58	4.49	5.03	4.75	-22.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	109	100	95	79	90	85	-14.9%
Population	100	103	104	106	109	110	110	10.4%
GDP per population (GDP per capita)	100	100	119	133	131	139	143	43.0%
Energy intensity (TPES/GDP)	100	103	82	78	67	71	66	-34.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	102	99	87	82	82	82	-18.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	8.31	31.63	2.63	2.33	44.90	-14.9%
Main activity producer elec. and heat	3.61	0.75	1.10	2.29	7.75	-0.2%
Unallocated autoproducers	0.30	0.14	0.03	0.04	0.51	56.6%
Other energy industry own use	0.36	1.92	0.03	-	2.32	42.5%
Manufacturing industries and construction	4.01	4.11	0.94	-	9.06	-29.1%
Transport	-	22.34	0.10	-	22.44	13.5%
<i>of which: road</i>	-	21.39	0.10	-	21.49	20.6%
Other	0.02	2.36	0.44	-	2.82	-73.1%
<i>of which: residential</i>	0.01	0.16	0.16	-	0.33	-93.2%
Reference Approach	9.67	36.30	2.63	2.33	50.93	-1.6%
Diff. due to losses and/or transformation	0.81	0.53	-	-	1.34	
Statistical differences	0.55	4.14	-0.00	-	4.69	
<i>Memo: international marine bunkers</i>	-	5.43	-	-	5.43	159.5%
<i>Memo: international aviation bunkers</i>	-	2.19	-	-	2.19	104.2%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	21.39	20.0%	33.3	33.3
Manufacturing industries - oil	4.11	-45.6%	6.4	39.7
Manufacturing industries - coal/peat	4.01	-13.0%	6.3	46.0
Main activity prod. elec. and heat - coal/peat	3.61	-31.0%	5.6	51.6
Main activity prod. elec. and heat - other	2.29	140.5%	3.6	55.2
Non-specified other - oil	2.20	-58.6%	3.4	58.6
Other energy industry own use - oil	1.92	45.1%	3.0	61.6
Main activity prod. elec. and heat - gas	1.10	148.4%	1.7	63.3
Other transport - oil	0.96	-51.0%	1.5	64.8
<i>Memo: total CO₂ from fuel combustion</i>	<i>44.90</i>	<i>-14.9%</i>	<i>69.9</i>	<i>69.9</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Switzerland

Figure 1. CO₂ emissions by fuel

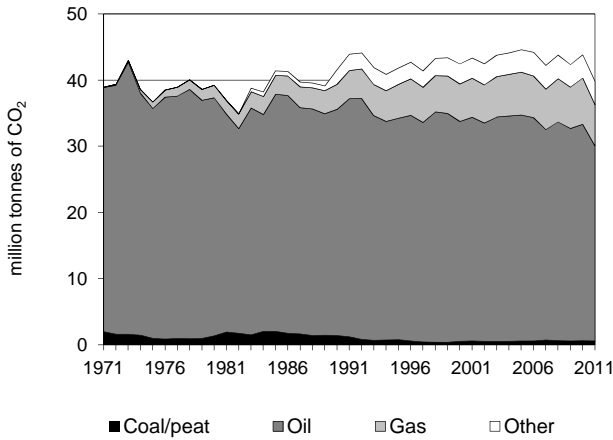


Figure 2. CO₂ emissions by sector

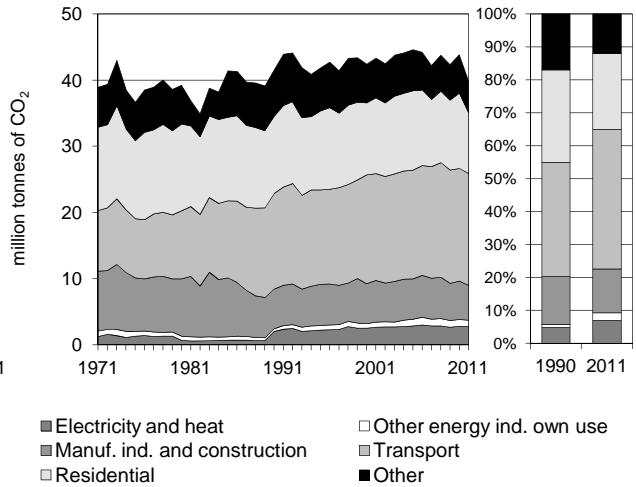


Figure 3. Reference vs Sectoral Approach

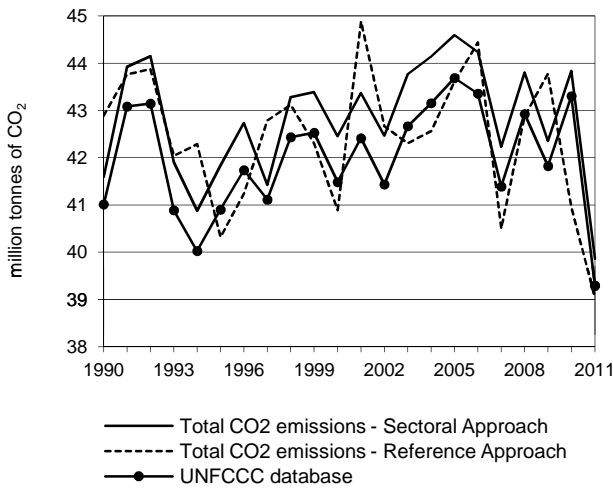


Figure 4. Electricity generation by fuel

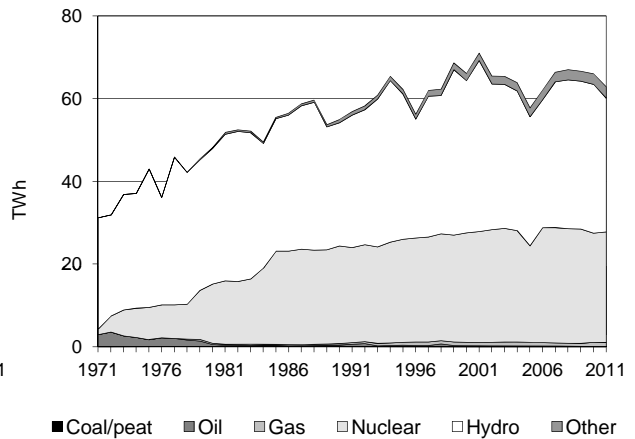


Figure 5. Changes in selected indicators *

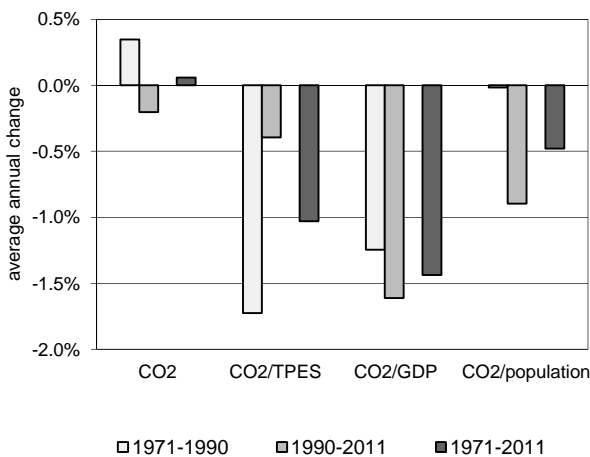
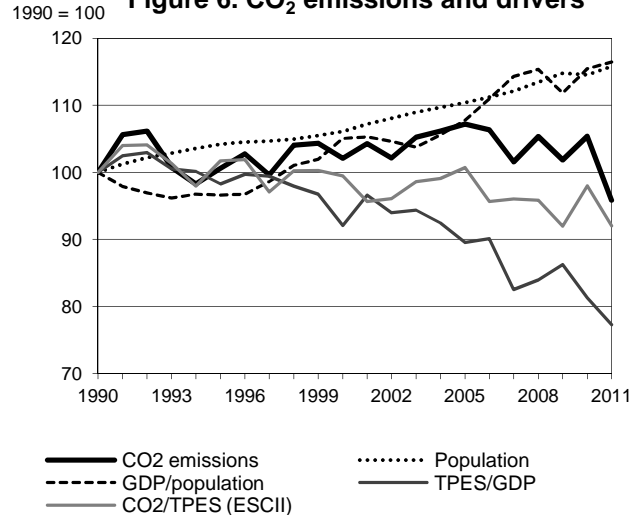


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Switzerland

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	41.59	41.84	42.45	44.59	42.35	43.83	39.86	-4.2%
TPES (PJ)	1 020	1 009	1 047	1 086	1 129	1 097	1 062	4.2%
GDP (billion 2005 USD)	323.50	325.62	360.56	384.75	415.31	427.91	436.15	34.8%
GDP PPP (billion 2005 USD)	231.14	232.65	257.62	274.90	296.73	305.74	311.63	34.8%
Population (millions)	6.80	7.08	7.21	7.50	7.80	7.79	7.87	15.8%
CO ₂ / TPES (tCO ₂ per TJ)	40.8	41.5	40.6	41.1	37.5	40.0	37.5	-8.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.13	0.13	0.12	0.12	0.10	0.10	0.09	-28.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.18	0.18	0.16	0.16	0.14	0.14	0.13	-28.9%
CO ₂ / population (tCO ₂ per capita)	6.12	5.91	5.89	5.95	5.43	5.63	5.07	-17.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	101	102	107	102	105	96	-4.2%
Population	100	104	106	110	115	115	116	15.8%
GDP per population (GDP per capita)	100	97	105	108	112	115	116	16.4%
Energy intensity (TPES/GDP)	100	98	92	90	86	81	77	-22.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	102	99	101	92	98	92	-8.0%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.57	29.51	6.22	3.56	39.86	-4.2%
Main activity producer elec. and heat	-	0.01	0.19	-	0.20	-65.0%
Unallocated autoproducers	-	0.02	0.27	2.27	2.57	77.5%
Other energy industry own use	-	0.94	0.01	-	0.94	128.6%
Manufacturing industries and construction	0.54	1.87	1.92	0.97	5.30	-11.7%
Transport	-	16.77	0.09	-	16.86	16.9%
<i>of which: road</i>	-	16.51	0.04	-	16.55	19.3%
Other	0.04	9.89	3.74	0.31	13.98	-25.3%
<i>of which: residential</i>	0.04	6.90	2.27	-	9.20	-21.0%
Reference Approach	0.57	28.67	6.24	3.56	39.04	-9.0%
Diff. due to losses and/or transformation	-	0.34	0.02	-	0.36	
Statistical differences	-	- 1.18	- 0.00	-	- 1.18	
<i>Memo: international marine bunkers</i>	-	0.02	-	-	0.02	-55.6%
<i>Memo: international aviation bunkers</i>	-	4.47	-	-	4.47	49.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	16.51	19.0%	32.6	32.6
Residential - oil	6.90	-32.5%	13.6	46.3
Non-specified other - oil	3.00	-51.9%	5.9	52.2
Unallocated autoproducers - other	2.27	76.9%	4.5	56.7
Residential - gas	2.27	63.2%	4.5	61.2
Manufacturing industries - gas	1.92	42.3%	3.8	65.0
Manufacturing industries - oil	1.87	-26.4%	3.7	68.7
Non-specified other - gas	1.47	108.2%	2.9	71.6
Manufacturing industries -other	0.97	6.5%	1.9	73.5
<i>Memo: total CO₂ from fuel combustion</i>	<i>39.86</i>	<i>-4.2%</i>	<i>78.8</i>	<i>78.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Syrian Arab Republic

Figure 1. CO₂ emissions by fuel

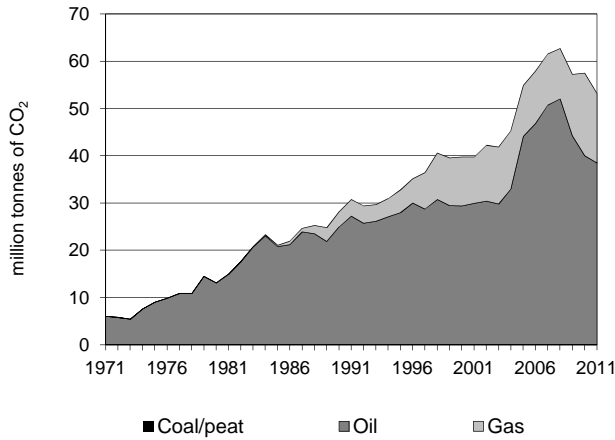


Figure 2. CO₂ emissions by sector

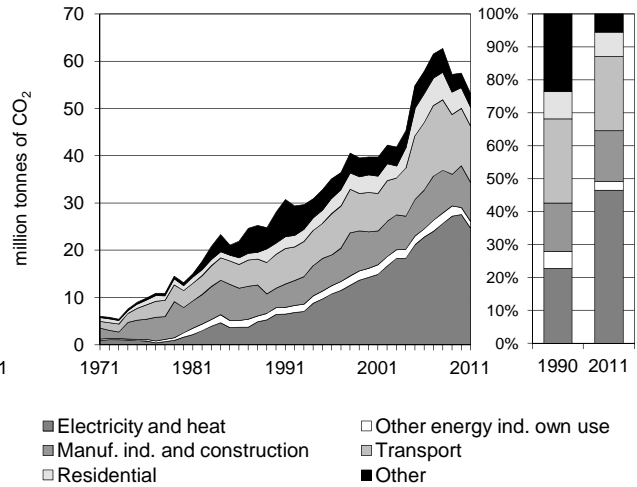


Figure 3. Reference vs Sectoral Approach

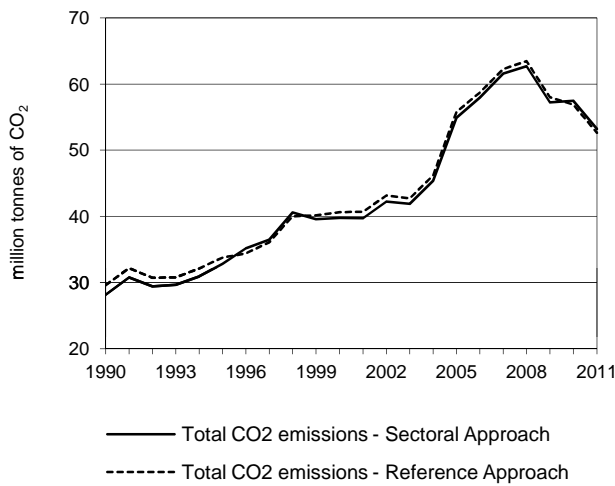


Figure 4. Electricity generation by fuel

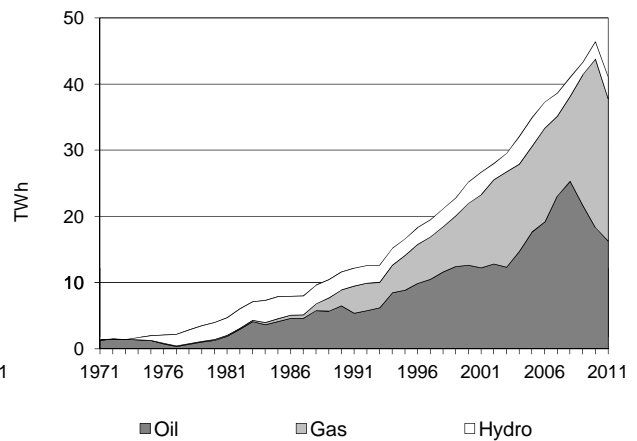


Figure 5. Changes in selected indicators *

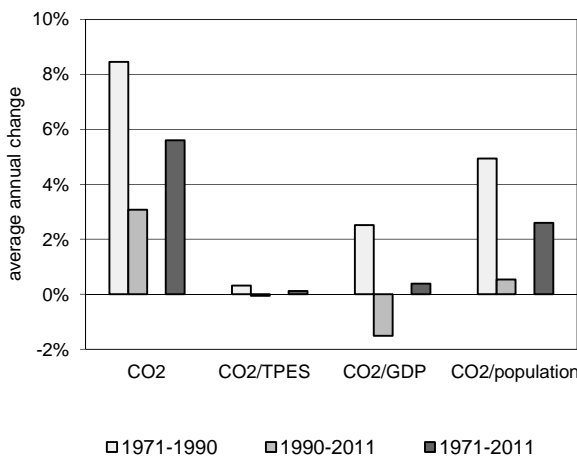
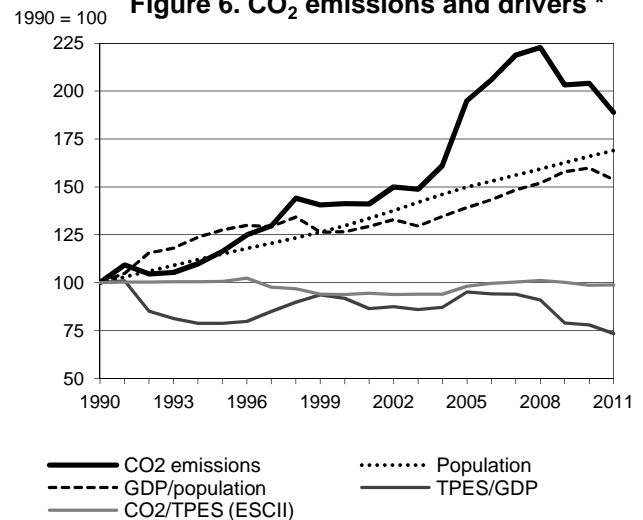


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Syrian Arab Republic

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	28.16	32.79	39.78	54.90	57.25	57.48	53.20	88.9%
TPES (PJ)	438	507	660	871	889	906	837	91.0%
GDP (billion 2005 USD)	13.82	20.25	22.68	28.86	35.48	36.61	35.88	159.7%
GDP PPP (billion 2005 USD)	36.58	53.62	60.05	76.40	93.93	96.93	95.00	159.7%
Population (millions)	12.32	14.17	15.99	18.48	20.04	20.45	20.82	68.9%
CO ₂ / TPES (tCO ₂ per TJ)	64.3	64.7	60.3	63.1	64.4	63.4	63.6	-1.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	2.04	1.62	1.75	1.90	1.61	1.57	1.48	-27.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.77	0.61	0.66	0.72	0.61	0.59	0.56	-27.3%
CO ₂ / population (tCO ₂ per capita)	2.28	2.31	2.49	2.97	2.86	2.81	2.56	11.8%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	116	141	195	203	204	189	88.9%
Population	100	115	130	150	163	166	169	68.9%
GDP per population (GDP per capita)	100	127	127	139	158	160	154	53.7%
Energy intensity (TPES/GDP)	100	79	92	95	79	78	74	-26.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	101	94	98	100	99	99	-1.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.01	38.46	14.73	-	53.20	88.9%
Main activity producer elec. and heat	-	11.64	11.68	-	23.32	326.3%
Unallocated autoproducers	-	1.40	-	-	1.40	47.0%
Other energy industry own use	-	1.12	0.29	-	1.40	-3.8%
Manufacturing industries and construction	0.01	5.85	2.38	-	8.24	99.4%
Transport	-	11.94	-	-	11.94	66.6%
<i>of which: road</i>	-	11.73	-	-	11.73	63.6%
Other	-	6.51	0.38	-	6.89	-23.2%
<i>of which: residential</i>	-	3.97	-	-	3.97	70.2%
Reference Approach	0.01	37.91	14.73	-	52.65	77.7%
Diff. due to losses and/or transformation	0.00	-0.55	-	-	-0.55	
Statistical differences	-	0.00	-	-	0.00	
<i>Memo: international marine bunkers</i>	-	2.97	-	-	2.97	5.4%
<i>Memo: international aviation bunkers</i>	-	0.09	-	-	0.09	-89.5%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	11.73	63.6%	15.5	15.5
Main activity prod. elec. and heat - gas	11.68	802.2%	15.4	30.9
Main activity prod. elec. and heat - oil	11.64	178.8%	15.4	46.3
Manufacturing industries - oil	5.85	41.5%	7.7	54.0
Residential - oil	3.97	70.2%	5.2	59.3
Non-specified other - oil	2.54	-48.0%	3.4	62.6
Manufacturing industries - gas	2.38	x	3.1	65.8
Unallocated autoproducers - oil	1.40	47.0%	1.9	67.6
Other energy industry own use - oil	1.12	-14.5%	1.5	69.1
<i>Memo: total CO₂ from fuel combustion</i>	<i>53.20</i>	<i>88.9%</i>	<i>70.3</i>	<i>70.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Tajikistan

Figure 1. CO₂ emissions by fuel

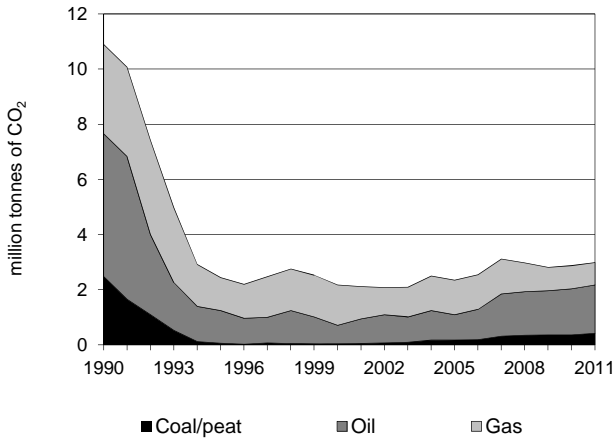


Figure 2. CO₂ emissions by sector

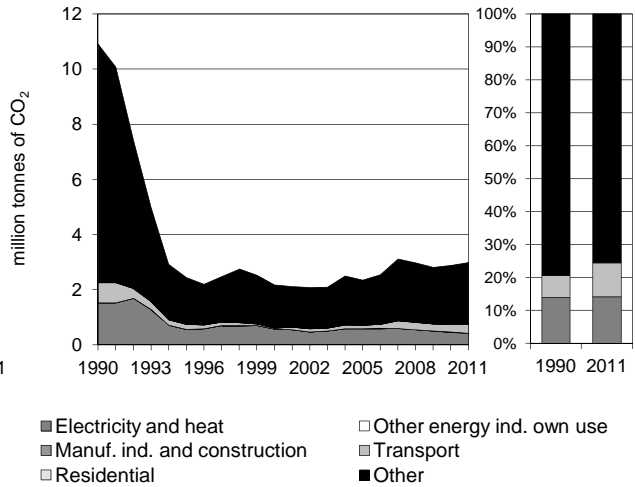


Figure 3. Reference vs Sectoral Approach

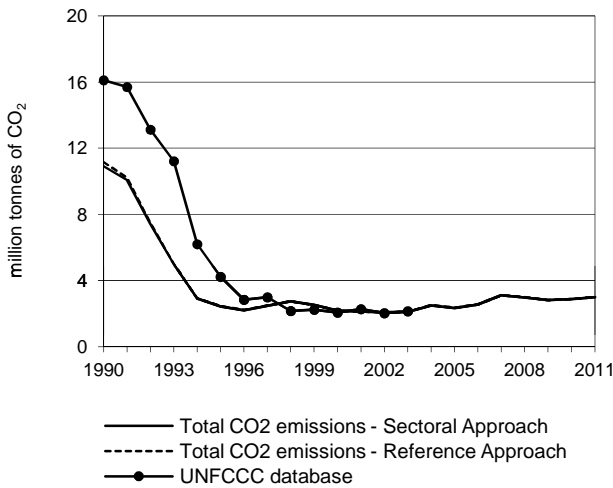


Figure 4. Electricity generation by fuel

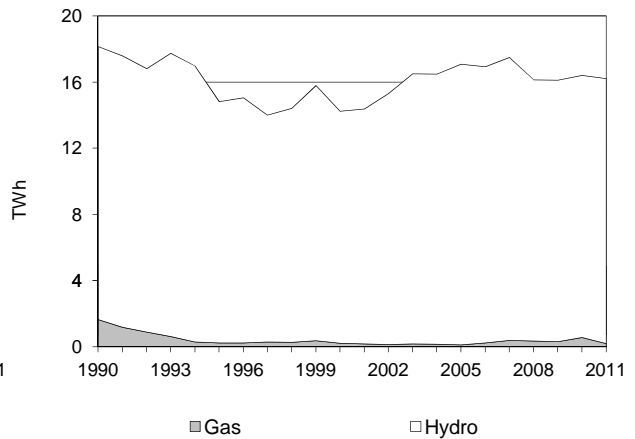


Figure 5. Changes in selected indicators *

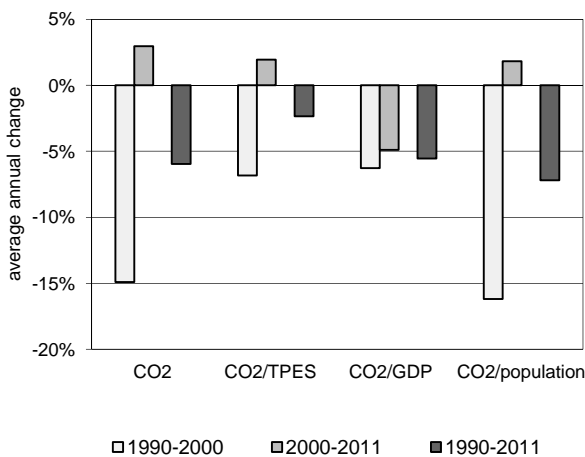
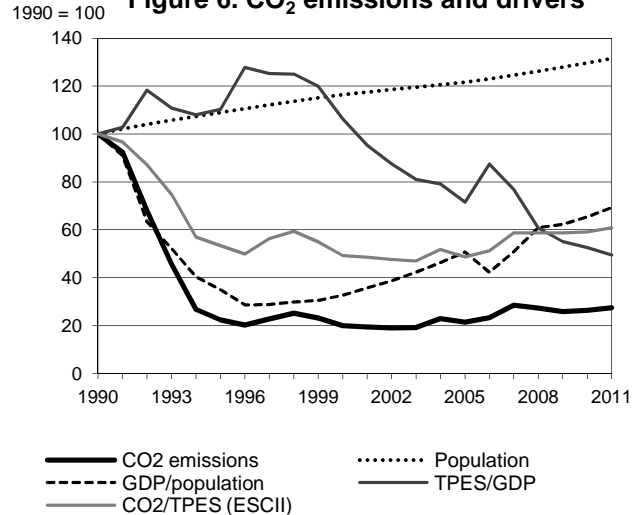


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Tajikistan

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	10.90	2.44	2.17	2.34	2.81	2.87	2.99	-72.6%
TPES (PJ)	222	93	90	98	98	99	100	-54.9%
GDP (billion 2005 USD)	3.75	1.43	1.43	2.31	2.99	3.18	3.42	-8.8%
GDP PPP (billion 2005 USD)	15.70	5.97	5.98	9.68	12.52	13.33	14.32	-8.8%
Population (millions)	5.30	5.78	6.17	6.45	6.78	6.88	6.98	31.6%
CO ₂ / TPES (tCO ₂ per TJ)	49.0	26.2	24.1	23.9	28.8	29.0	29.8	-39.2%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	2.91	1.71	1.52	1.01	0.94	0.90	0.87	-69.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.69	0.41	0.36	0.24	0.22	0.22	0.21	-69.9%
CO ₂ / population (tCO ₂ per capita)	2.06	0.42	0.35	0.36	0.41	0.42	0.43	-79.1%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	22	20	21	26	26	27	-72.6%
Population	100	109	116	122	128	130	132	31.6%
GDP per population (GDP per capita)	100	35	33	51	62	65	69	-30.7%
Energy intensity (TPES/GDP)	100	110	106	72	55	53	49	-50.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	53	49	49	59	59	61	-39.2%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.42	1.75	0.82	-	2.99	-72.6%
Main activity producer elec. and heat	-	-	0.42	-	0.42	-72.2%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	-	-	-	-	-	-
Transport	-	0.28	0.03	-	0.31	-57.6%
<i>of which: road</i>	-	0.28	0.03	-	0.31	-57.6%
Other	0.42	1.47	0.37	-	2.26	-73.9%
<i>of which: residential</i>	-	-	-	-	-	-
Reference Approach	0.42	1.76	0.82	-	3.00	-73.1%
Diff. due to losses and/or transformation	-	0.01	-	-	0.01	-
Statistical differences	-	-	-	-	-	-
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	0.09	-	-	0.09	106.7%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Non-specified other - oil	1.47	-66.9%	14.3	14.3
Main activity prod. elec. and heat - gas	0.42	-72.2%	4.1	18.4
Non-specified other sectors - coal/peat	0.42	-83.1%	4.1	22.4
Non-specified other - gas	0.37	-78.7%	3.5	26.0
Road - oil	0.28	-61.2%	2.7	28.7
Road - gas	0.03	x	0.3	28.9
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>2.99</i>	<i>-72.6%</i>	<i>28.9</i>	<i>28.9</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

United Republic of Tanzania

Figure 1. CO₂ emissions by fuel

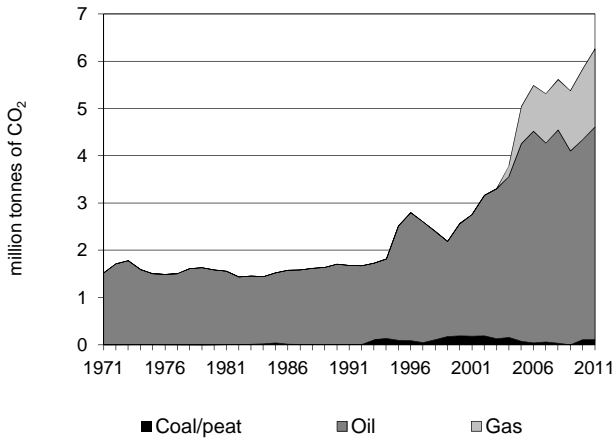


Figure 2. CO₂ emissions by sector

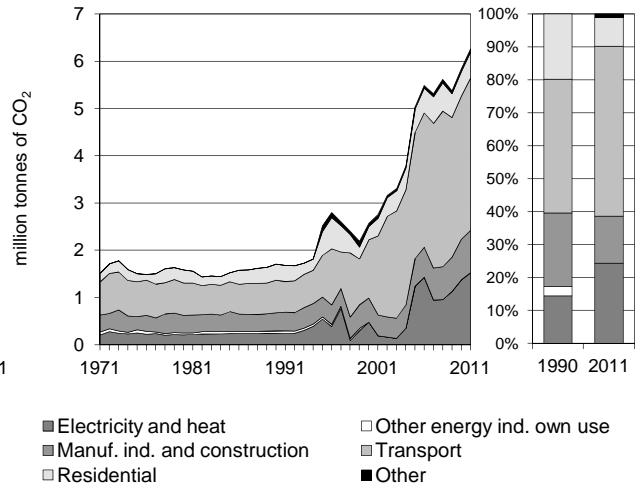


Figure 3. Reference vs Sectoral Approach

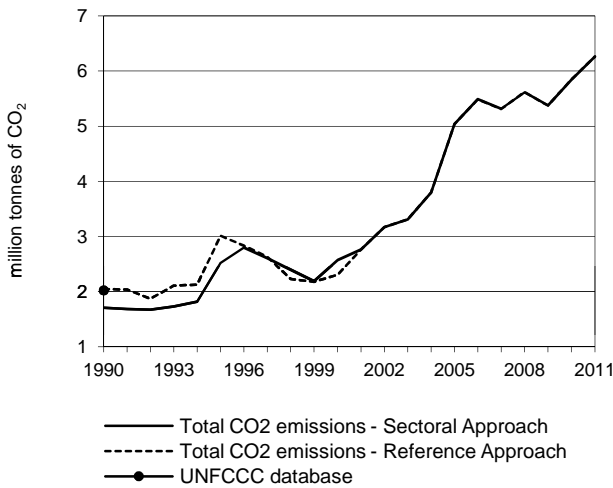


Figure 4. Electricity generation by fuel

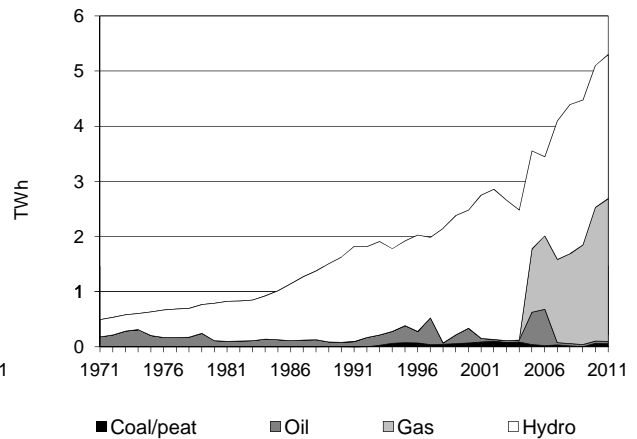


Figure 5. Changes in selected indicators *

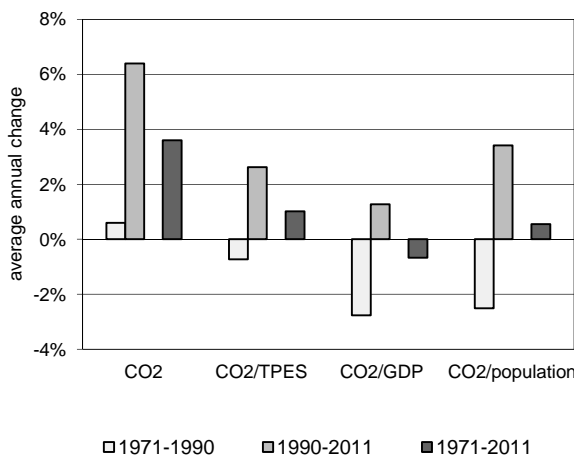
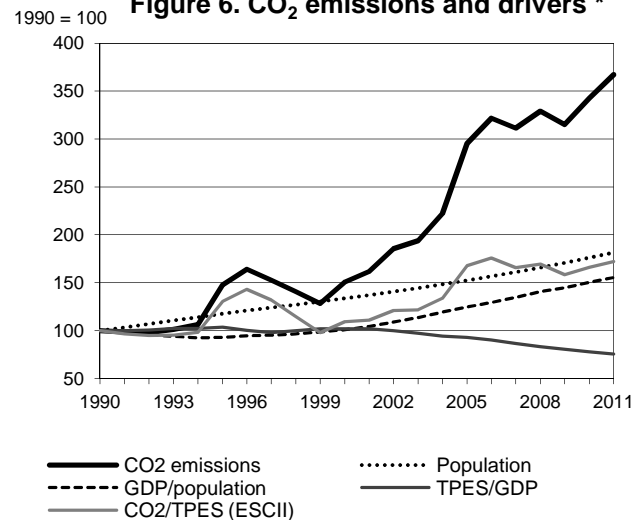


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

United Republic of Tanzania

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	1.71	2.52	2.57	5.04	5.38	5.84	6.26	267.1%
TPES (PJ)	408	461	561	718	810	839	869	113.2%
GDP (billion 2005 USD)	7.45	8.15	10.06	14.14	18.42	19.72	20.99	181.6%
GDP PPP (billion 2005 USD)	21.27	23.25	28.71	40.35	52.57	56.27	59.90	181.6%
Population (millions)	25.48	29.94	34.04	38.83	43.53	44.84	46.22	81.4%
CO ₂ / TPES (tCO ₂ per TJ)	4.2	5.5	4.6	7.0	6.6	7.0	7.2	72.2%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.23	0.31	0.26	0.36	0.29	0.30	0.30	30.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.08	0.11	0.09	0.12	0.10	0.10	0.10	30.3%
CO ₂ / population (tCO ₂ per capita)	0.07	0.08	0.08	0.13	0.12	0.13	0.14	102.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	148	151	295	315	342	367	267.1%
Population	100	118	134	152	171	176	181	81.4%
GDP per population (GDP per capita)	100	93	101	124	145	150	155	55.3%
Energy intensity (TPES/GDP)	100	104	102	93	80	78	76	-24.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	130	109	168	159	166	172	72.2%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.11	4.50	1.65	-	6.26	267.1%
Main activity producer elec. and heat	-	0.05	1.42	-	1.46	490.3%
Unallocated autoproducers	0.06	-	-	-	0.06	x
Other energy industry own use	-	-	-	-	-	-100.0%
Manufacturing industries and construction	0.04	0.61	0.24	-	0.89	135.5%
Transport	-	3.22	-	-	3.22	365.8%
<i>of which: road</i>	-	3.22	-	-	3.22	365.8%
Other	-	0.62	-	-	0.62	82.2%
<i>of which: residential</i>	-	0.55	-	-	0.55	62.5%
Reference Approach	0.11	4.50	1.65	-	6.26	206.8%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	-	-0.00	-	-0.00	-
<i>Memo: international marine bunkers</i>	-	0.15	-	-	0.15	88.2%
<i>Memo: international aviation bunkers</i>	-	0.34	-	-	0.34	54.6%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	3.22	365.8%	6.7	6.7
Main activity prod. elec. and heat - gas	1.42	x	2.9	9.6
Manufacturing industries - oil	0.61	65.8%	1.3	10.9
Residential - oil	0.55	62.5%	1.1	12.0
Manufacturing industries - gas	0.24	x	0.5	12.5
Non-specified other - oil	0.07	x	0.1	12.6
Unallocated autoproducers - coal/peat	0.06	x	0.1	12.8
Main activity prod. elec. and heat - oil	0.05	-81.4%	0.1	12.8
Manufacturing industries - coal/peat	0.04	323.6%	0.1	12.9
<i>Memo: total CO₂ from fuel combustion</i>	6.26	267.1%	12.9	12.9

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Thailand

Figure 1. CO₂ emissions by fuel

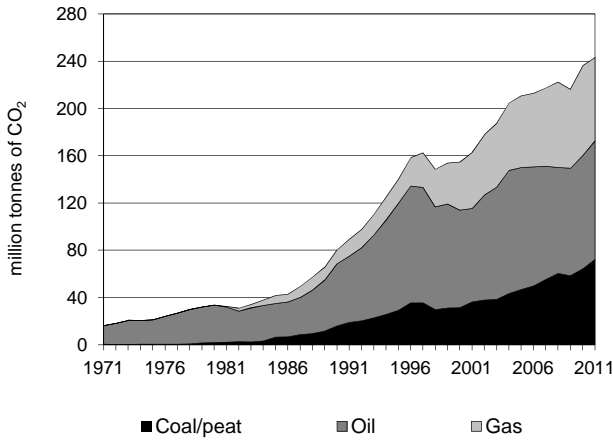


Figure 2. CO₂ emissions by sector

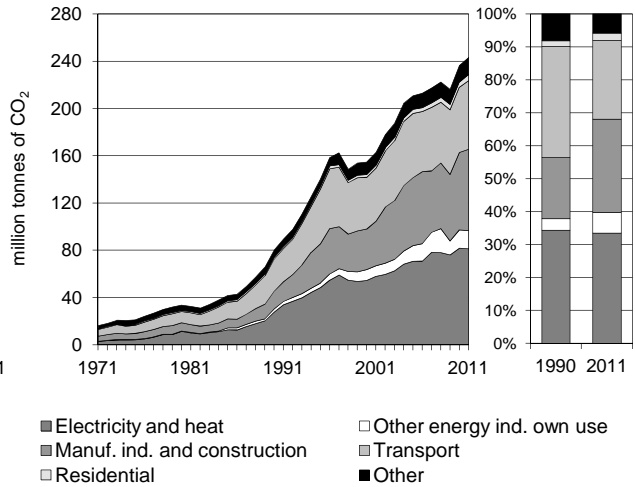


Figure 3. Reference vs Sectoral Approach

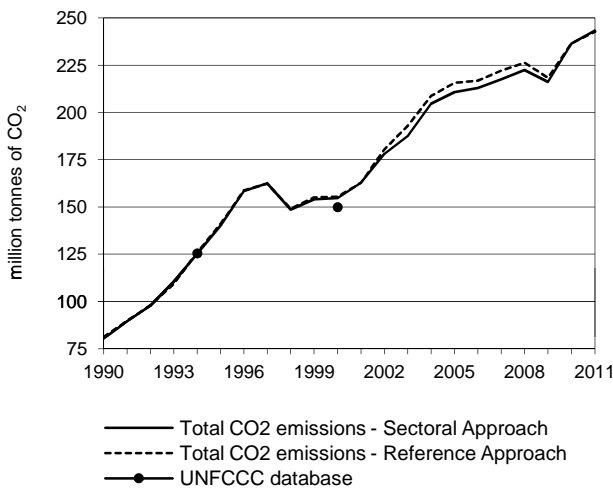


Figure 4. Electricity generation by fuel

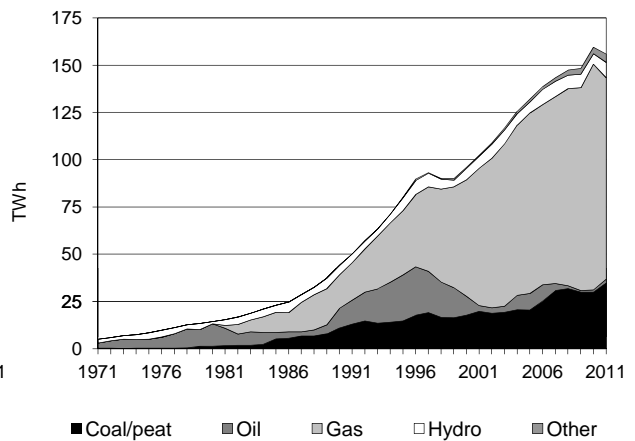


Figure 5. Changes in selected indicators *

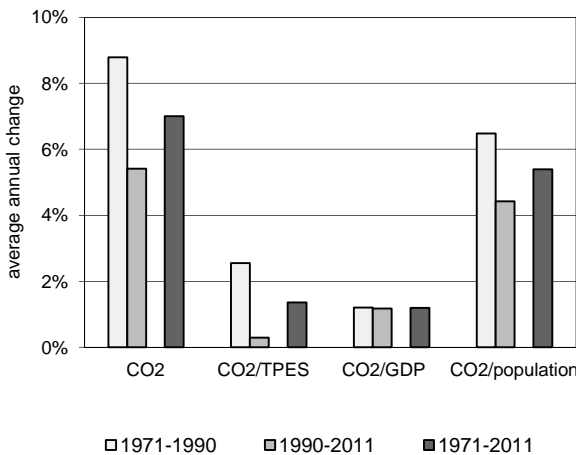
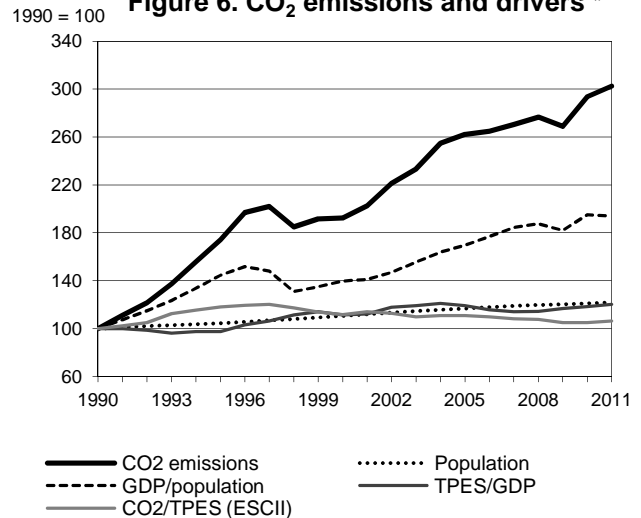


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Thailand

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	80.41	140.20	154.74	210.78	216.22	236.21	243.19	202.4%
TPES (PJ)	1 756	2 593	3 026	4 152	4 492	4 917	4 988	184.1%
GDP (billion 2005 USD)	88.92	134.47	137.52	176.35	194.87	210.09	210.25	136.4%
GDP PPP (billion 2005 USD)	224.49	339.46	347.15	445.20	491.94	530.37	530.78	136.4%
Population (millions)	57.07	59.65	63.16	66.70	68.71	69.12	69.52	21.8%
CO ₂ / TPES (tCO ₂ per TJ)	45.8	54.1	51.1	50.8	48.1	48.0	48.8	6.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.90	1.04	1.13	1.20	1.11	1.12	1.16	27.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.36	0.41	0.45	0.47	0.44	0.45	0.46	27.9%
CO ₂ / population (tCO ₂ per capita)	1.41	2.35	2.45	3.16	3.15	3.42	3.50	148.3%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	174	192	262	269	294	302	202.4%
Population	100	105	111	117	120	121	122	21.8%
GDP per population (GDP per capita)	100	145	140	170	182	195	194	94.1%
Energy intensity (TPES/GDP)	100	98	111	119	117	118	120	20.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	118	112	111	105	105	106	6.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	72.12	100.47	70.61	-	243.19	202.4%
Main activity producer elec. and heat	29.99	1.40	41.11	-	72.50	162.0%
Unallocated autoproducers	5.24	0.01	3.67	-	8.92	x
Other energy industry own use	-	1.89	13.55	-	15.44	456.9%
Manufacturing industries and construction	36.88	23.77	7.92	-	68.57	359.3%
Transport	-	53.89	4.36	-	58.25	115.2%
<i>of which: road</i>	-	53.20	4.36	-	57.56	124.3%
Other	-	19.51	0.00	-	19.52	144.8%
<i>of which: residential</i>	-	5.33	-	-	5.33	268.1%
Reference Approach	72.53	99.56	70.61	-	242.70	198.9%
Diff. due to losses and/or transformation	0.01	- 3.22	-	-	- 3.21	
Statistical differences	0.41	2.32	-	-	2.72	
<i>Memo: international marine bunkers</i>	-	3.33	-	-	3.33	95.7%
<i>Memo: international aviation bunkers</i>	-	12.02	-	-	12.02	115.2%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	53.20	107.3%	13.4	13.4
Main activity prod. elec. and heat - gas	41.11	360.1%	10.3	23.7
Manufacturing industries - coal/peat	36.88	572.5%	9.3	33.0
Main activity prod. elec. and heat - coal/peat	29.99	183.5%	7.6	40.6
Manufacturing industries - oil	23.77	160.6%	6.0	46.6
Non-specified other - oil	14.18	117.4%	3.6	50.1
Other energy industry own use - gas	13.55	462.3%	3.4	53.5
Manufacturing industries - gas	7.92	+	2.0	55.5
Residential - oil	5.33	268.1%	1.3	56.9
<i>Memo: total CO₂ from fuel combustion</i>	<i>243.19</i>	<i>202.4%</i>	<i>61.2</i>	<i>61.2</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Togo

Figure 1. CO₂ emissions by fuel

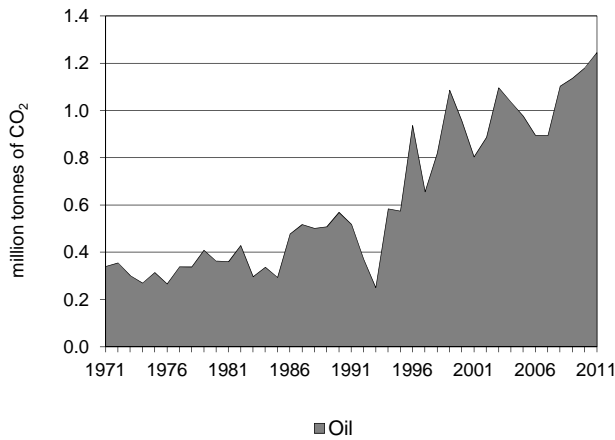


Figure 2. CO₂ emissions by sector

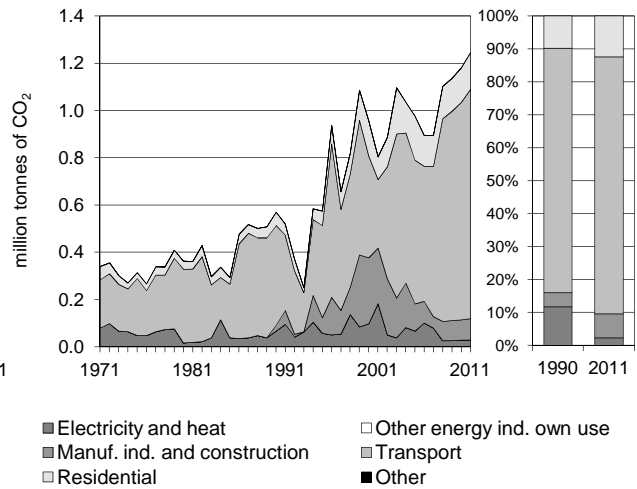


Figure 3. Reference vs Sectoral Approach

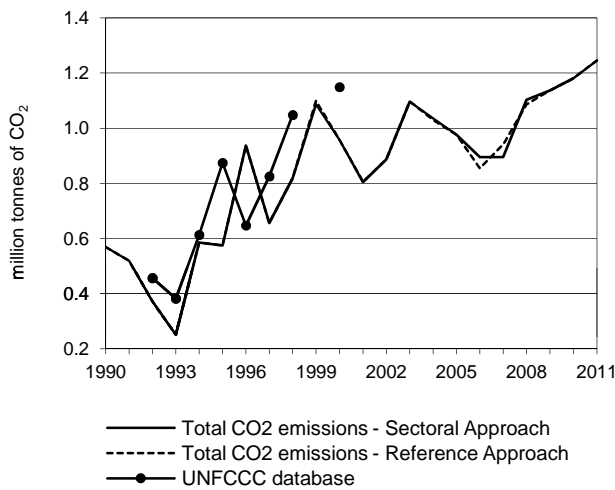


Figure 4. Electricity generation by fuel

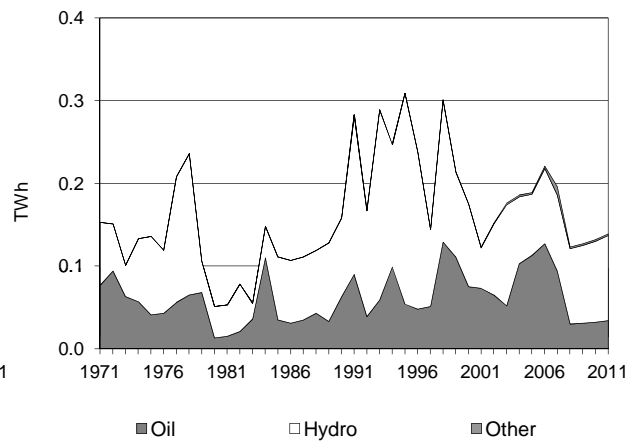


Figure 5. Changes in selected indicators *

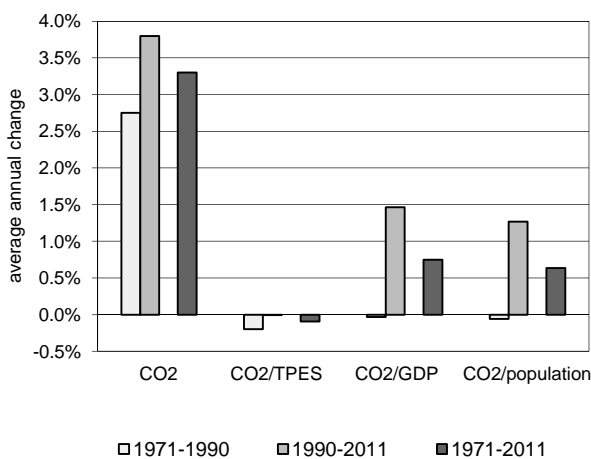
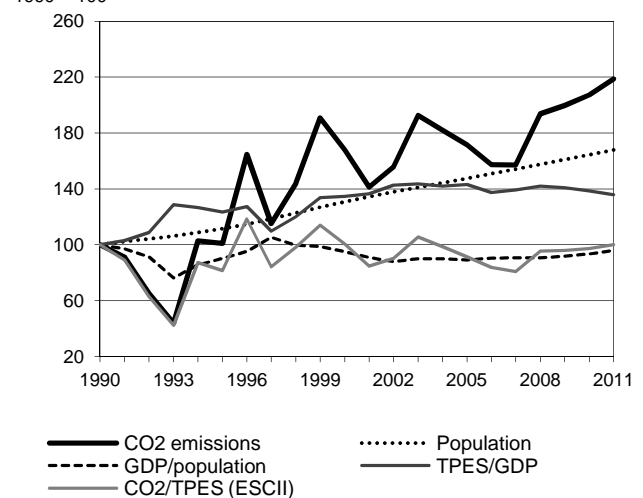


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Togo

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	0.57	0.57	0.96	0.98	1.14	1.18	1.25	118.7%
TPES (PJ)	53	66	88	99	110	113	116	118.8%
GDP (billion 2005 USD)	1.61	1.62	2.00	2.12	2.38	2.48	2.60	61.2%
GDP PPP (billion 2005 USD)	3.54	3.55	4.39	4.64	5.23	5.44	5.70	61.2%
Population (millions)	3.67	4.09	4.79	5.41	5.90	6.03	6.16	67.9%
CO ₂ / TPES (tCO ₂ per TJ)	10.8	8.8	10.8	9.8	10.3	10.5	10.8	0.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.35	0.36	0.48	0.46	0.48	0.48	0.48	35.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.16	0.16	0.22	0.21	0.22	0.22	0.22	35.7%
CO ₂ / population (tCO ₂ per capita)	0.16	0.14	0.20	0.18	0.19	0.20	0.20	30.3%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	101	168	171	200	207	219	118.7%
Population	100	111	131	148	161	164	168	67.9%
GDP per population (GDP per capita)	100	90	95	89	92	94	96	-4.0%
Energy intensity (TPES/GDP)	100	123	135	143	141	139	136	35.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	81	101	91	96	97	100	0.0%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	1.25	-	-	1.25	118.7%
Main activity producer elec. and heat	-	0.03	-	-	0.03	-57.9%
Unallocated autoproducers	-	0.00	-	-	0.00	-50.0%
Other energy industry own use	-	-	-	-	-	-
Manufacturing industries and construction	-	0.09	-	-	0.09	270.8%
Transport	-	0.97	-	-	0.97	129.9%
<i>of which: road</i>	-	0.97	-	-	0.97	129.9%
Other	-	0.16	-	-	0.16	177.1%
<i>of which: residential</i>	-	0.16	-	-	0.16	177.1%
Reference Approach	-	1.25	-	-	1.25	118.7%
Diff. due to losses and/or transformation	-	-	-	-	-	-
Statistical differences	-	-	-	-	-	-
<i>Memo: international marine bunkers</i>	-	0.02	-	-	0.02	..
<i>Memo: international aviation bunkers</i>	-	0.21	-	-	0.21	103.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	0.97	129.9%	9.7	9.7
Residential - oil	0.16	177.1%	1.5	11.2
Manufacturing industries - oil	0.09	270.8%	0.9	12.1
Main activity prod. elec. and heat - oil	0.03	-57.9%	0.3	12.4
Unallocated autoproducers - oil	0.00	-50.0%	0.0	12.4
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	1.25	118.7%	12.4	12.4

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Trinidad and Tobago

Figure 1. CO₂ emissions by fuel

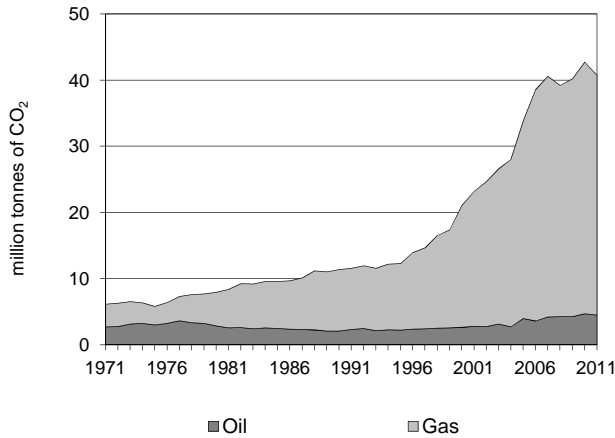


Figure 2. CO₂ emissions by sector

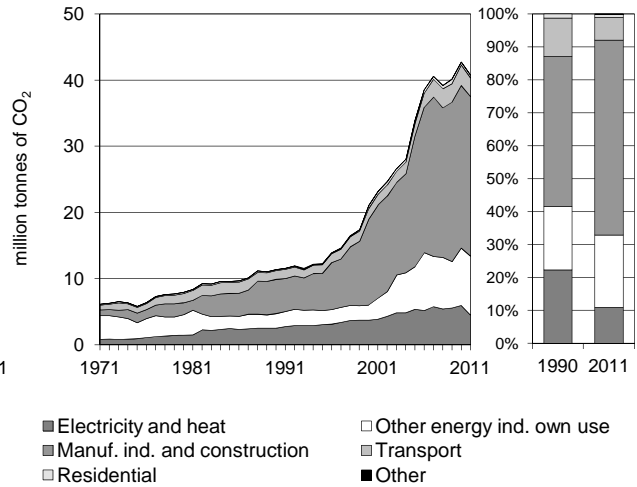


Figure 3. Reference vs Sectoral Approach

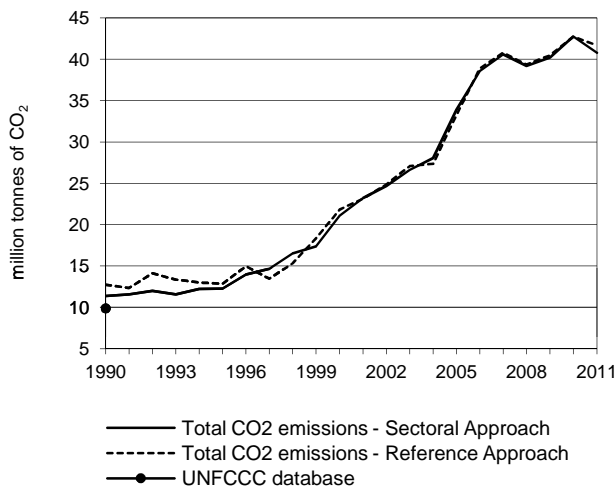


Figure 4. Electricity generation by fuel

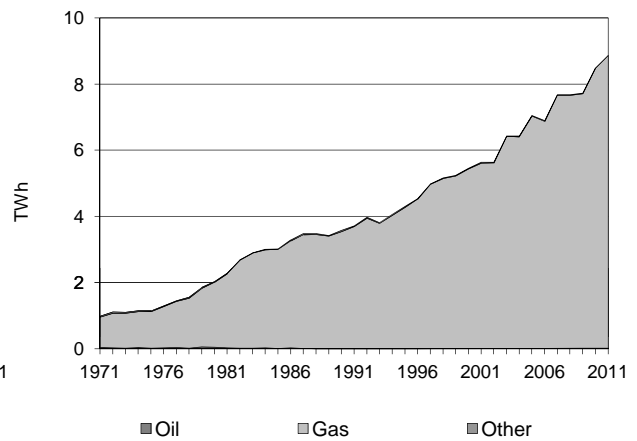


Figure 5. Changes in selected indicators *

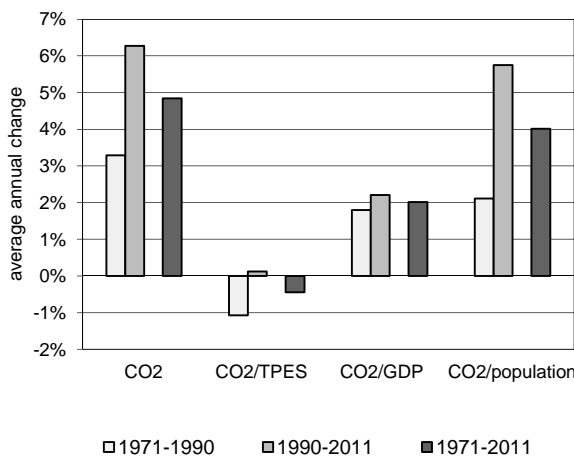
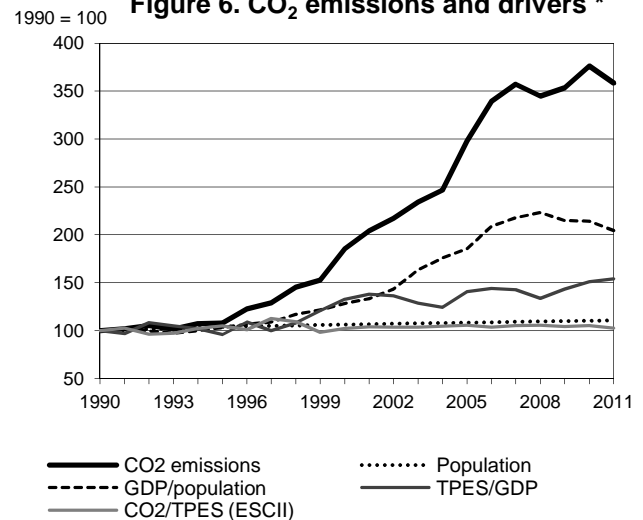


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Trinidad and Tobago

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	11.37	12.27	21.08	33.90	40.19	42.76	40.78	258.6%
TPES (PJ)	251	257	454	707	849	895	876	249.4%
GDP (billion 2005 USD)	8.02	8.60	10.96	16.09	18.96	18.96	18.18	126.6%
GDP PPP (billion 2005 USD)	13.16	14.10	17.97	26.38	31.09	31.09	29.81	126.6%
Population (millions)	1.22	1.26	1.29	1.32	1.34	1.34	1.35	10.8%
CO ₂ / TPES (tCO ₂ per TJ)	45.4	47.7	46.4	48.0	47.3	47.8	46.6	2.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.42	1.43	1.92	2.11	2.12	2.26	2.24	58.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.86	0.87	1.17	1.28	1.29	1.38	1.37	58.3%
CO ₂ / population (tCO ₂ per capita)	9.36	9.73	16.31	25.78	30.08	31.89	30.29	223.7%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	108	185	298	353	376	359	258.6%
Population	100	104	106	108	110	110	111	10.8%
GDP per population (GDP per capita)	100	103	128	185	215	214	205	104.5%
Energy intensity (TPES/GDP)	100	96	133	141	143	151	154	54.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	105	102	106	104	105	103	2.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	4.52	36.26	-	40.78	258.6%
Main activity producer elec. and heat	-	0.02	4.43	-	4.46	85.0%
Unallocated autoproducers	-	-	0.03	-	0.03	-76.8%
Other energy industry own use	-	0.91	8.01	-	8.92	307.2%
Manufacturing industries and construction	-	0.56	23.56	-	24.12	365.9%
Transport	-	2.84	-	-	2.84	113.0%
<i>of which: road</i>	-	2.84	-	-	2.84	120.7%
Other	-	0.20	0.22	-	0.42	203.0%
<i>of which: residential</i>	-	0.17	0.22	-	0.40	184.7%
Reference Approach	-	4.22	37.47	-	41.69	228.1%
Diff. due to losses and/or transformation	-	-0.14	1.21	-	1.07	
Statistical differences	-	-0.15	0.00	-	-0.15	
<i>Memo: international marine bunkers</i>	-	1.17	-	-	1.17	974.5%
<i>Memo: international aviation bunkers</i>	-	0.21	-	-	0.21	6.5%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Manufacturing industries - gas	23.56	382.9%	41.8	41.8
Other energy industry own use - gas	8.01	330.1%	14.2	56.0
Main activity prod. elec. and heat - gas	4.43	84.4%	7.9	63.9
Road - oil	2.84	120.7%	5.0	68.9
Other energy industry own use - oil	0.91	176.7%	1.6	70.5
Manufacturing industries - oil	0.56	86.9%	1.0	71.5
Residential - gas	0.22	x	0.4	71.9
Residential - oil	0.17	24.6%	0.3	72.2
Unallocated autoproducers - gas	0.03	-76.8%	0.1	72.3
<i>Memo: total CO₂ from fuel combustion</i>	<i>40.78</i>	<i>258.6%</i>	<i>72.3</i>	<i>72.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Tunisia

Figure 1. CO₂ emissions by fuel

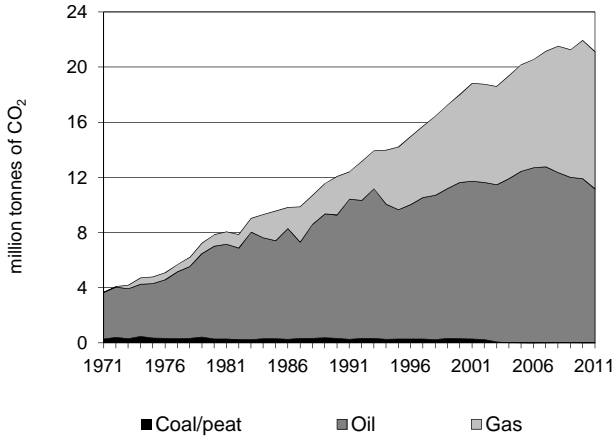


Figure 2. CO₂ emissions by sector

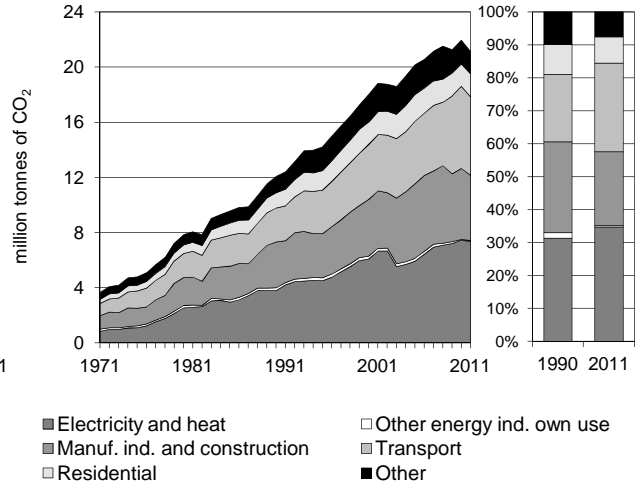


Figure 3. Reference vs Sectoral Approach

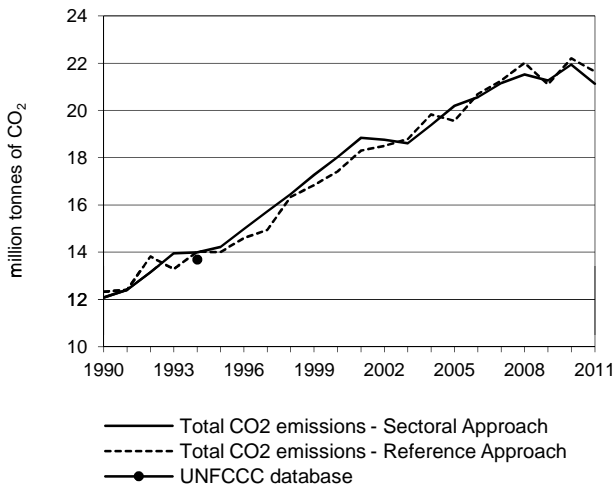


Figure 4. Electricity generation by fuel

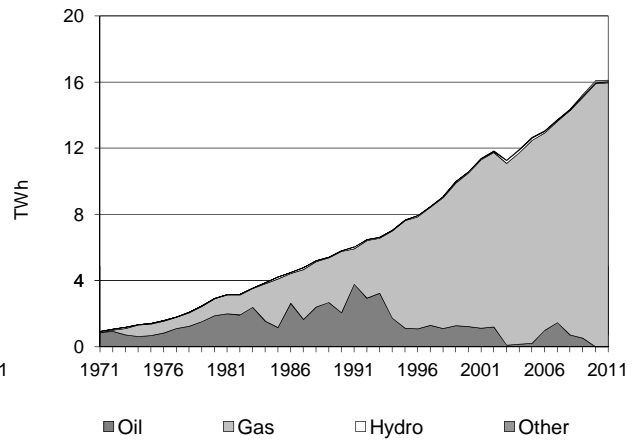


Figure 5. Changes in selected indicators *

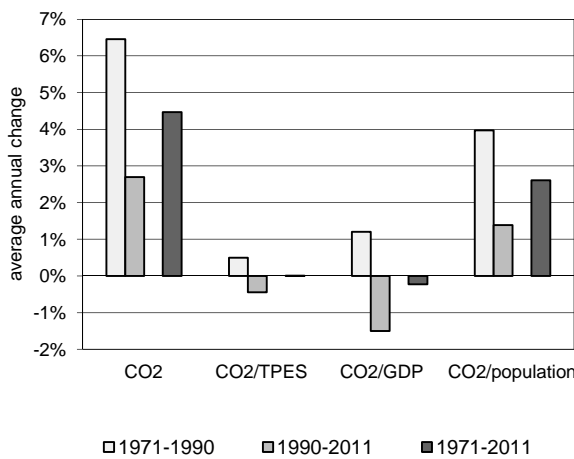
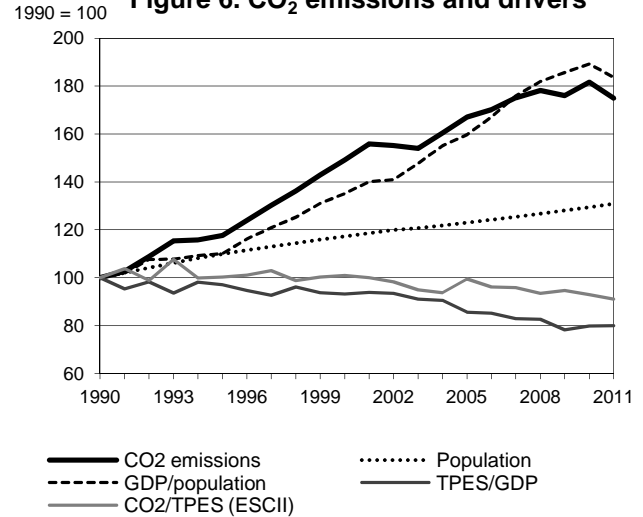


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Tunisia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	12.08	14.22	18.02	20.19	21.26	21.95	21.13	74.9%
TPES (PJ)	207	243	306	348	385	405	398	92.1%
GDP (billion 2005 USD)	16.43	19.87	26.05	32.28	39.06	40.23	39.50	140.4%
GDP PPP (billion 2005 USD)	36.67	44.32	58.12	72.03	87.14	89.76	88.14	140.4%
Population (millions)	8.15	8.96	9.56	10.03	10.44	10.55	10.67	30.9%
CO ₂ / TPES (tCO ₂ per TJ)	58.3	58.5	58.9	58.0	55.2	54.2	53.1	-9.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.74	0.72	0.69	0.63	0.54	0.55	0.54	-27.2%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.33	0.32	0.31	0.28	0.24	0.24	0.24	-27.2%
CO ₂ / population (tCO ₂ per capita)	1.48	1.59	1.88	2.01	2.04	2.08	1.98	33.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	118	149	167	176	182	175	74.9%
Population	100	110	117	123	128	129	131	30.9%
GDP per population (GDP per capita)	100	110	135	160	186	189	184	83.6%
Energy intensity (TPES/GDP)	100	97	93	86	78	80	80	-20.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	100	101	99	95	93	91	-9.0%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	11.18	9.96	-	21.13	74.9%
Main activity producer elec. and heat	-	0.01	5.97	-	5.98	87.0%
Unallocated autoproducers	-	-	1.36	-	1.36	133.3%
Other energy industry own use	-	0.06	0.01	-	0.07	-63.5%
Manufacturing industries and construction	-	2.92	1.82	-	4.74	42.0%
Transport	-	5.69	0.00	-	5.69	130.7%
<i>of which: road</i>	-	5.69	-	-	5.69	133.7%
Other	-	2.51	0.78	-	3.29	43.4%
<i>of which: residential</i>	-	1.22	0.46	-	1.68	52.9%
Reference Approach	-	11.56	10.08	-	21.64	75.5%
Diff. due to losses and/or transformation	-	0.03	-	-	0.03	
Statistical differences	-	0.35	0.12	-	0.47	
<i>Memo: international marine bunkers</i>	-	0.06	-	-	0.06	-7.1%
<i>Memo: international aviation bunkers</i>	-	0.72	-	-	0.72	26.3%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - gas	5.97	188.8%	16.5	16.5
Road - oil	5.69	133.7%	15.7	32.3
Manufacturing industries - oil	2.92	20.6%	8.1	40.3
Manufacturing industries - gas	1.82	205.7%	5.0	45.4
Unallocated autoproducers - gas	1.36	x	3.8	49.2
Non-specified other - oil	1.29	12.8%	3.6	52.7
Residential - oil	1.22	20.6%	3.4	56.1
Residential - gas	0.46	435.5%	1.3	57.4
Non-specified other - gas	0.32	520.2%	0.9	58.3
<i>Memo: total CO₂ from fuel combustion</i>	21.13	74.9%	58.5	58.5

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Turkey

Figure 1. CO₂ emissions by fuel

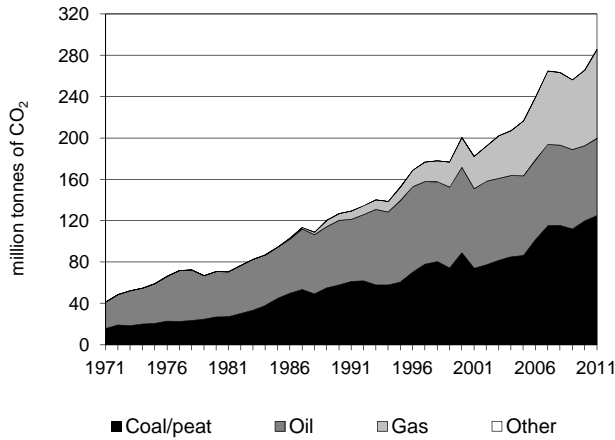


Figure 2. CO₂ emissions by sector

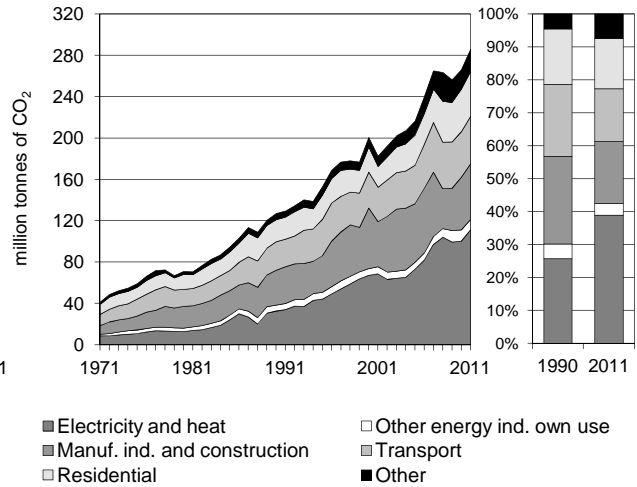


Figure 3. Reference vs Sectoral Approach

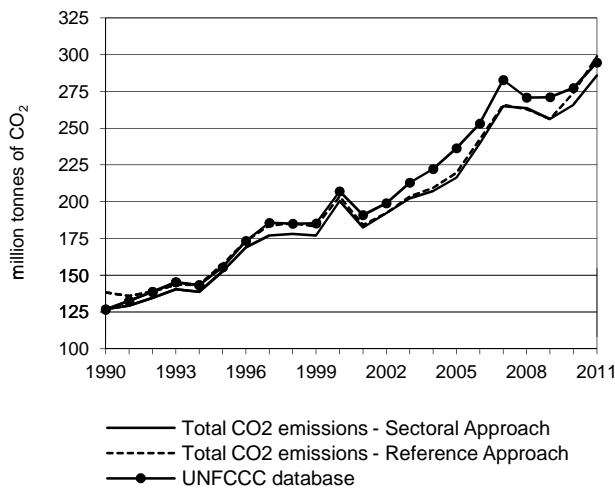


Figure 4. Electricity generation by fuel

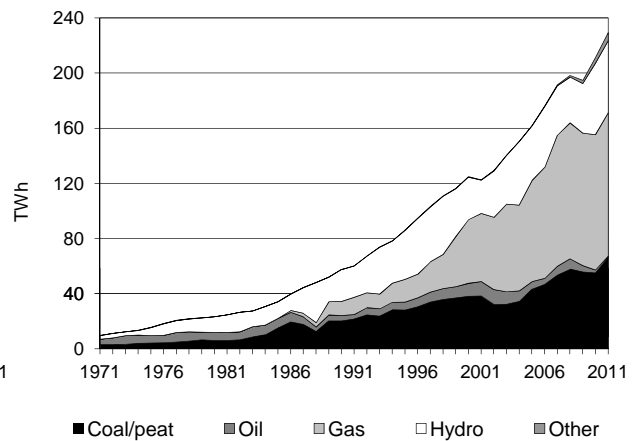


Figure 5. Changes in selected indicators *

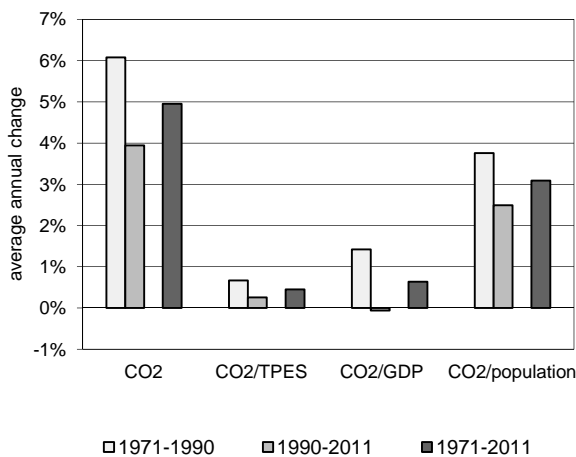
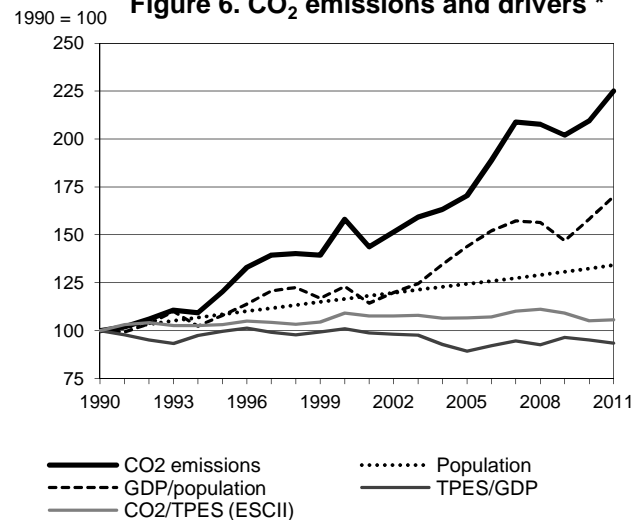


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Turkey

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	126.91	152.66	200.56	216.36	256.31	265.88	285.73	125.1%
TPES (PJ)	2 209	2 577	3 197	3 533	4 089	4 402	4 708	113.2%
GDP (billion 2005 USD)	269.69	315.86	386.59	482.99	517.70	565.10	614.68	127.9%
GDP PPP (billion 2005 USD)	436.22	510.91	625.31	781.24	837.38	914.06	994.25	127.9%
Population (millions)	55.12	59.76	64.25	68.57	72.05	73.00	73.95	34.2%
CO ₂ / TPES (tCO ₂ per TJ)	57.5	59.2	62.7	61.2	62.7	60.4	60.7	5.6%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.47	0.48	0.52	0.45	0.50	0.47	0.46	-1.2%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.29	0.30	0.32	0.28	0.31	0.29	0.29	-1.2%
CO ₂ / population (tCO ₂ per capita)	2.30	2.55	3.12	3.16	3.56	3.64	3.86	67.8%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	120	158	170	202	209	225	125.1%
Population	100	108	117	124	131	132	134	34.2%
GDP per population (GDP per capita)	100	108	123	144	147	158	170	69.9%
Energy intensity (TPES/GDP)	100	100	101	89	96	95	94	-6.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	103	109	107	109	105	106	5.6%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	125.10	74.72	85.75	0.16	285.73	125.1%
Main activity producer elec. and heat	62.23	0.22	37.47	0.03	99.95	271.9%
Unallocated autoproducers	6.58	0.55	4.16	0.14	11.42	95.8%
Other energy industry own use	3.84	3.00	3.02	-	9.86	75.4%
Manufacturing industries and construction	27.82	7.29	18.80	-	53.92	59.9%
Transport	-	45.18	0.51	-	45.69	64.6%
<i>of which: road</i>	-	39.44	0.14	-	39.59	57.2%
Other	24.62	18.48	21.78	-	64.88	139.4%
<i>of which: residential</i>	23.20	3.45	16.89	-	43.54	104.8%
Reference Approach	135.37	77.57	85.76	0.16	298.85	116.2%
Diff. due to losses and/or transformation	1.74	-0.66	0.01	-	1.09	
Statistical differences	8.53	3.50	0.00	-	12.03	
<i>Memo: international marine bunkers</i>	-	0.47	-	-	0.47	26.6%
<i>Memo: international aviation bunkers</i>	-	3.45	-	-	3.45	547.4%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	62.23	199.4%	15.0	15.0
Road - oil	39.44	56.6%	9.5	24.6
Main activity prod. elec. and heat - gas	37.47	653.7%	9.1	33.7
Manufacturing industries - coal/peat	27.82	42.8%	6.7	40.4
Residential - coal/peat	23.20	89.6%	5.6	46.0
Manufacturing industries - gas	18.80	+	4.5	50.5
Residential - gas	16.89	+	4.1	54.6
Non-specified other - oil	15.02	157.2%	3.6	58.3
Manufacturing industries - oil	7.29	-43.0%	1.8	60.0
<i>Memo: total CO₂ from fuel combustion</i>	<i>285.73</i>	<i>125.1%</i>	<i>69.1</i>	<i>69.1</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Turkmenistan

Figure 1. CO₂ emissions by fuel

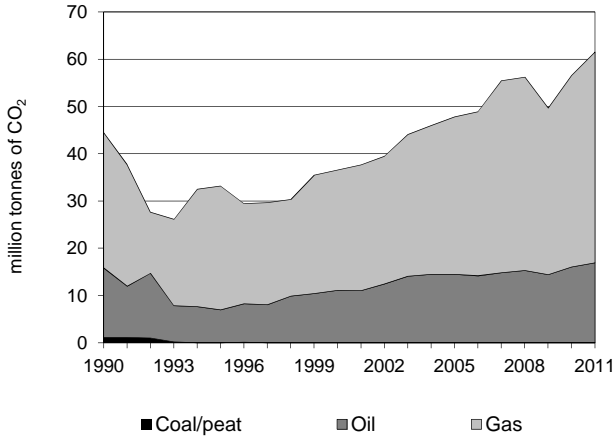


Figure 2. CO₂ emissions by sector

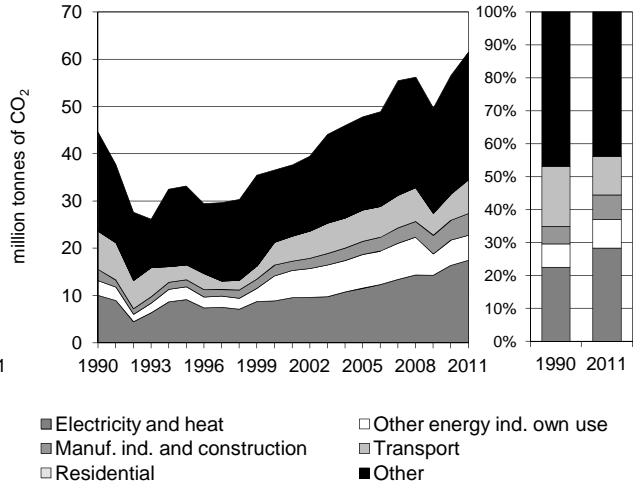


Figure 3. Reference vs Sectoral Approach

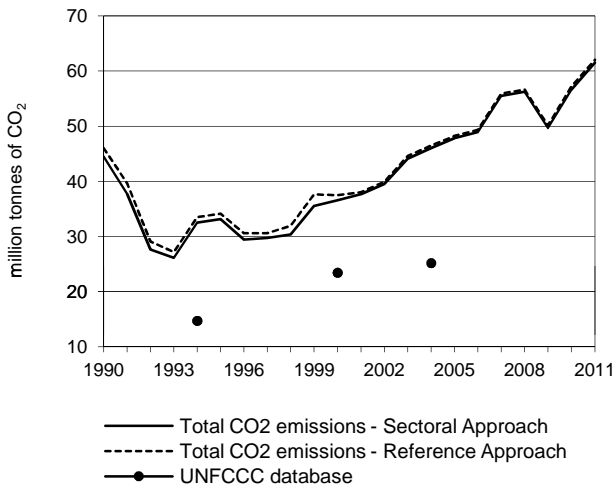


Figure 4. Electricity generation by fuel

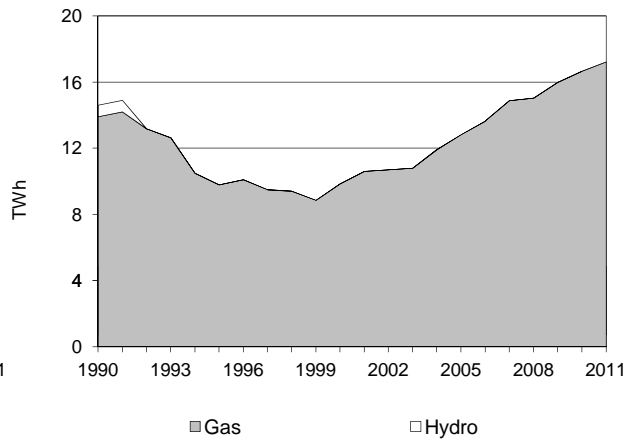


Figure 5. Changes in selected indicators *

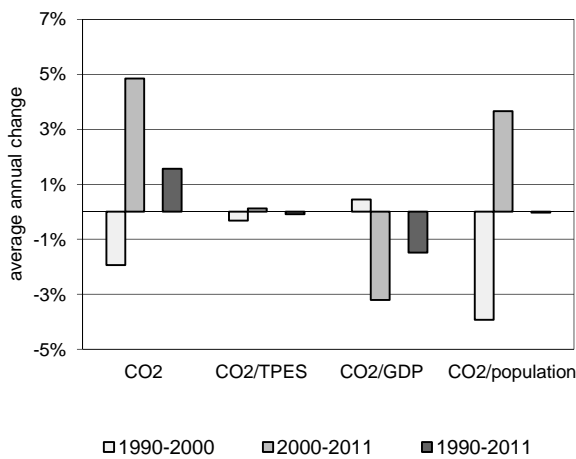
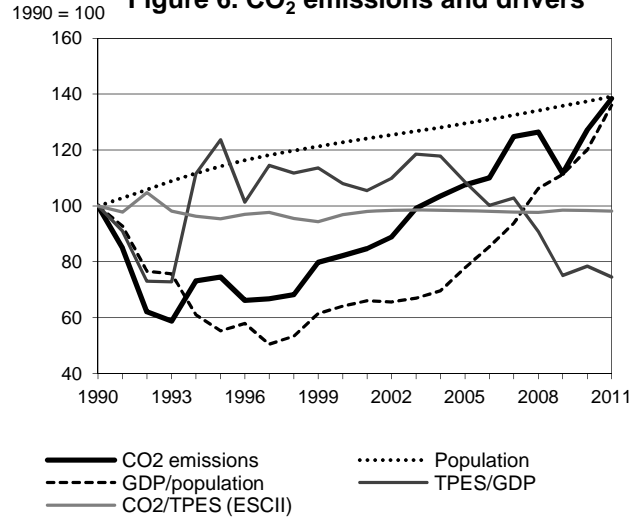


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Turkmenistan

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	44.47	33.17	36.56	47.82	49.67	56.59	61.55	38.4%
TPES (PJ)	733	573	623	802	832	949	1 035	41.1%
GDP (billion 2005 USD)	8.04	5.08	6.32	8.10	12.16	13.27	15.22	89.4%
GDP PPP (billion 2005 USD)	22.43	14.17	17.63	22.61	33.91	37.03	42.47	89.3%
Population (millions)	3.67	4.19	4.50	4.75	4.98	5.04	5.11	39.2%
CO ₂ / TPES (tCO ₂ per TJ)	60.6	57.9	58.7	59.6	59.7	59.6	59.5	-1.9%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	5.53	6.53	5.78	5.90	4.09	4.26	4.04	-26.9%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.98	2.34	2.07	2.12	1.46	1.53	1.45	-26.9%
CO ₂ / population (tCO ₂ per capita)	12.12	7.92	8.12	10.07	9.97	11.22	12.06	-0.6%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	75	82	108	112	127	138	38.4%
Population	100	114	123	129	136	137	139	39.2%
GDP per population (GDP per capita)	100	55	64	78	111	120	136	36.0%
Energy intensity (TPES/GDP)	100	124	108	109	75	78	74	-25.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	97	98	98	98	98	-1.9%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	16.94	44.61	-	61.55	38.4%
Main activity producer elec. and heat	-	-	17.45	-	17.45	74.2%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	0.49	4.80	-	5.29	68.8%
Manufacturing industries and construction	-	2.73	1.91	-	4.64	93.2%
Transport	-	3.71	3.44	-	7.15	-11.5%
<i>of which: road</i>	-	3.71	-	-	3.71	53.5%
Other	-	10.01	17.00	-	27.01	29.6%
<i>of which: residential</i>	-	-	-	-	-	-
Reference Approach	-	17.44	44.61	-	62.05	34.9%
Diff. due to losses and/or transformation	-	0.50	-	-	0.50	-
Statistical differences	-	-	-0.00	-	-0.00	-
<i>Memo: international marine bunkers</i>	-	..	-	-
<i>Memo: international aviation bunkers</i>	-	1.46	-	-	1.46	94.3%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - gas	17.45	74.2%	18.8	18.8
Non-specified other - gas	17.00	81.7%	18.3	37.1
Non-specified other - oil	10.01	-3.1%	10.8	47.8
Other energy industry own use - gas	4.80	67.7%	5.2	53.0
Road - oil	3.71	53.5%	4.0	57.0
Other transport - gas	3.44	-39.2%	3.7	60.7
Manufacturing industries - oil	2.73	63.2%	2.9	63.6
Manufacturing industries - gas	1.91	162.2%	2.1	65.7
Other energy industry own use - oil	0.49	80.7%	0.5	66.2
<i>Memo: total CO₂ from fuel combustion</i>	<i>61.55</i>	<i>38.4%</i>	<i>66.2</i>	<i>66.2</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Ukraine

Figure 1. CO₂ emissions by fuel

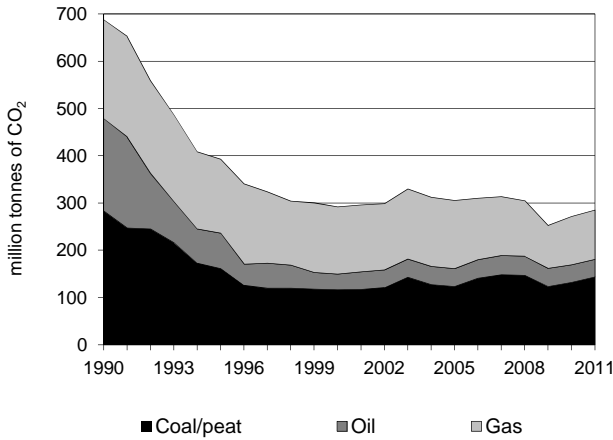


Figure 2. CO₂ emissions by sector

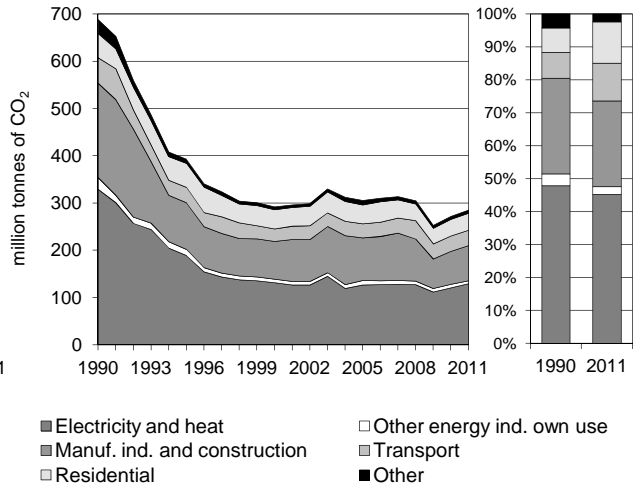


Figure 3. Reference vs Sectoral Approach

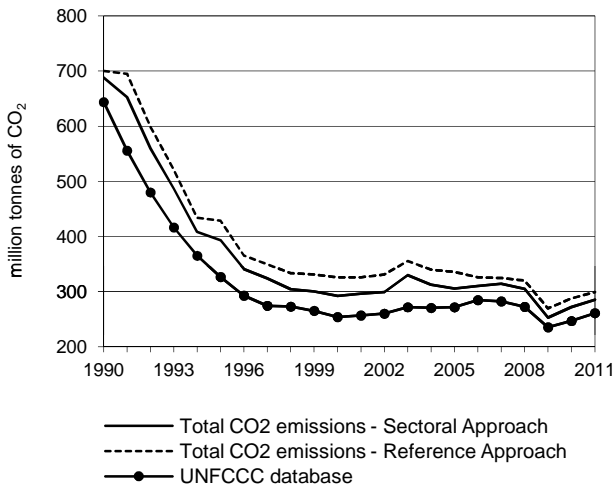


Figure 4. Electricity generation by fuel

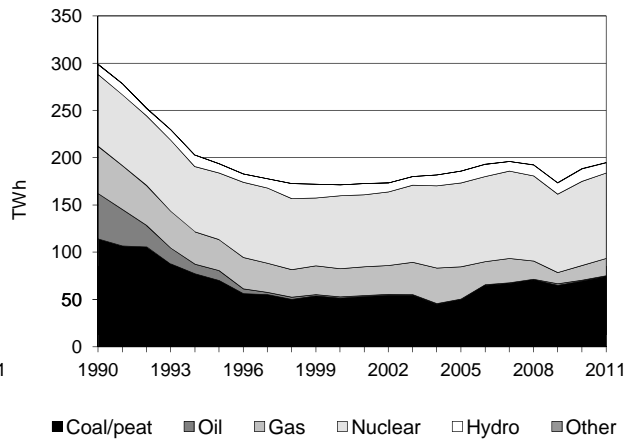


Figure 5. Changes in selected indicators *

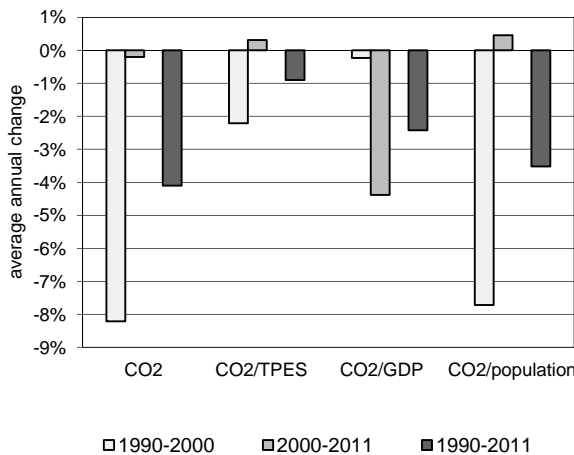
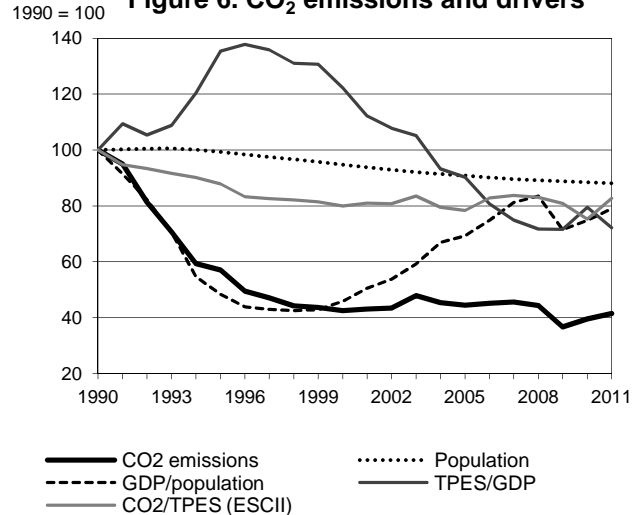


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Ukraine

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	687.86	392.78	291.96	305.59	252.47	271.63	285.36	-58.5%
TPES (PJ)	10 550	6 854	5 602	5 982	4 791	5 539	5 294	-49.8%
GDP (billion 2005 USD)	137.03	65.78	59.54	86.14	86.93	90.58	95.29	-30.5%
GDP PPP (billion 2005 USD)	418.39	200.83	181.78	263.01	265.40	276.55	290.93	-30.5%
Population (millions)	51.89	51.51	49.18	47.11	46.05	45.87	45.71	-11.9%
CO ₂ / TPES (tCO ₂ per TJ)	65.2	57.3	52.1	51.1	52.7	49.0	53.9	-17.3%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	5.02	5.97	4.90	3.55	2.90	3.00	2.99	-40.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	1.64	1.96	1.61	1.16	0.95	0.98	0.98	-40.3%
CO ₂ / population (tCO ₂ per capita)	13.26	7.63	5.94	6.49	5.48	5.92	6.24	-52.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	57	42	44	37	39	41	-58.5%
Population	100	99	95	91	89	88	88	-11.9%
GDP per population (GDP per capita)	100	48	46	69	71	75	79	-21.1%
Energy intensity (TPES/GDP)	100	135	122	90	72	79	72	-27.8%
Carbon intensity: ESCII (CO ₂ /TPES)	100	88	80	78	81	75	83	-17.3%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	143.97	37.05	104.34	-	285.36	-58.5%
Main activity producer elec. and heat	82.93	0.80	32.09	-	115.83	-61.1%
Unallocated autoproducers	7.52	0.29	5.55	-	13.36	-57.3%
Other energy industry own use	3.20	1.46	2.01	-	6.66	-72.8%
Manufacturing industries and construction	46.73	4.77	22.69	-	74.18	-62.9%
Transport	0.10	24.78	7.74	-	32.63	-39.9%
<i>of which: road</i>	-	23.97	0.10	-	24.07	-48.7%
Other	3.49	4.95	34.26	-	42.70	-46.8%
<i>of which: residential</i>	2.78	0.23	32.86	-	35.87	-29.9%
Reference Approach	158.09	35.06	105.94	-	299.09	-57.3%
Diff. due to losses and/or transformation	14.12	-0.20	1.59	-	15.51	
Statistical differences	0.00	-1.80	0.01	-	-1.78	
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.73	-	-	0.73	-88.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	82.93	-39.0%	19.5	19.5
Manufacturing industries - coal/peat	46.73	-55.7%	11.0	30.4
Residential - gas	32.86	61.0%	7.7	38.1
Main activity prod. elec. and heat - gas	32.09	-65.5%	7.5	45.7
Road - oil	23.97	-48.9%	5.6	51.3
Manufacturing industries - gas	22.69	-58.3%	5.3	56.6
Other transport - gas	7.64	x	1.8	58.4
Unallocated autoproducers - coal/peat	7.52	210.1%	1.8	60.2
Unallocated autoproducers - gas	5.55	-80.8%	1.3	61.5
<i>Memo: total CO₂ from fuel combustion</i>	<i>285.36</i>	<i>-58.5%</i>	<i>67.0</i>	<i>67.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

United Arab Emirates

Figure 1. CO₂ emissions by fuel

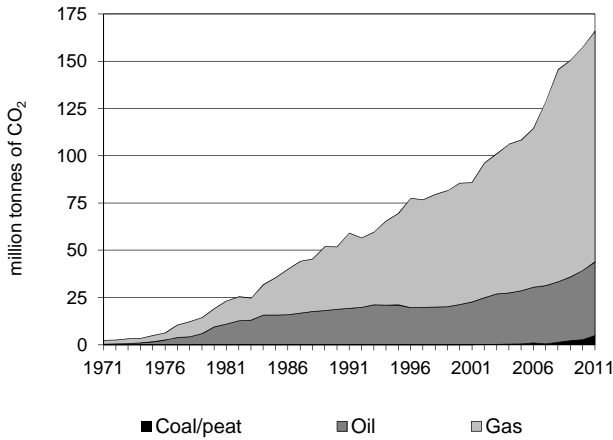


Figure 2. CO₂ emissions by sector

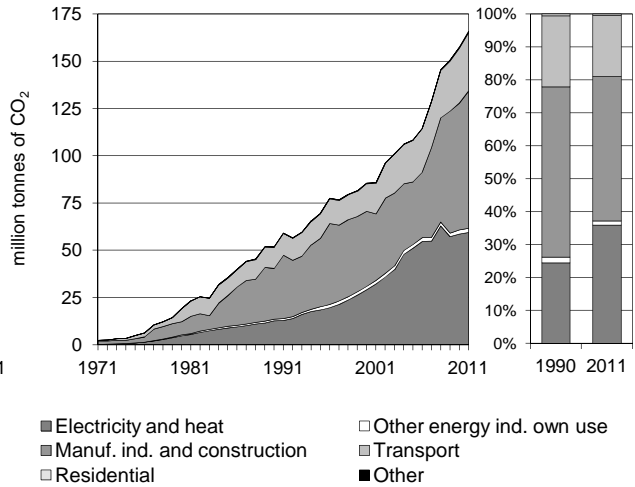


Figure 3. Reference vs Sectoral Approach

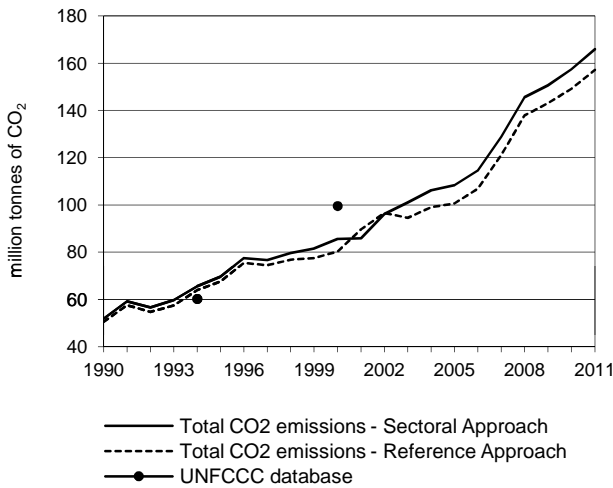


Figure 4. Electricity generation by fuel

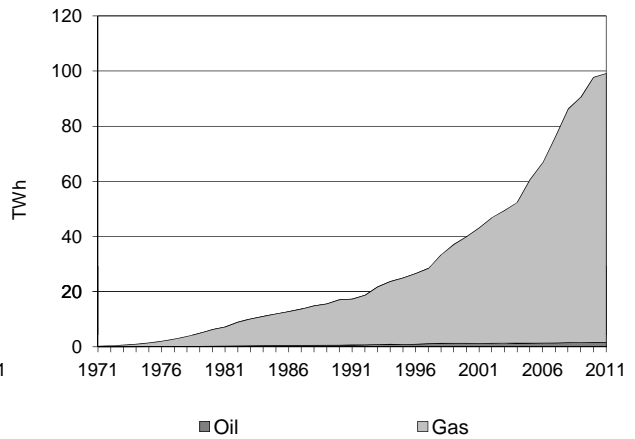


Figure 5. Changes in selected indicators *

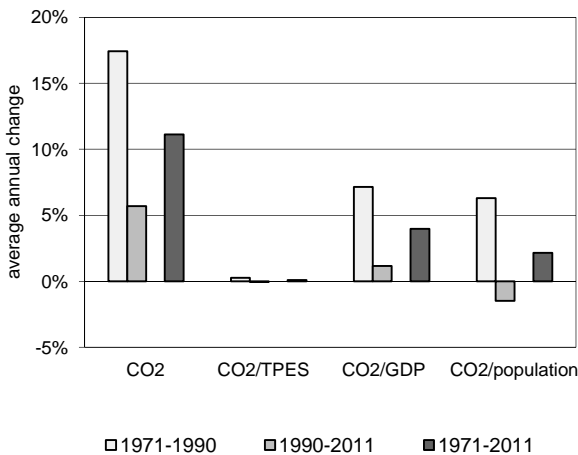
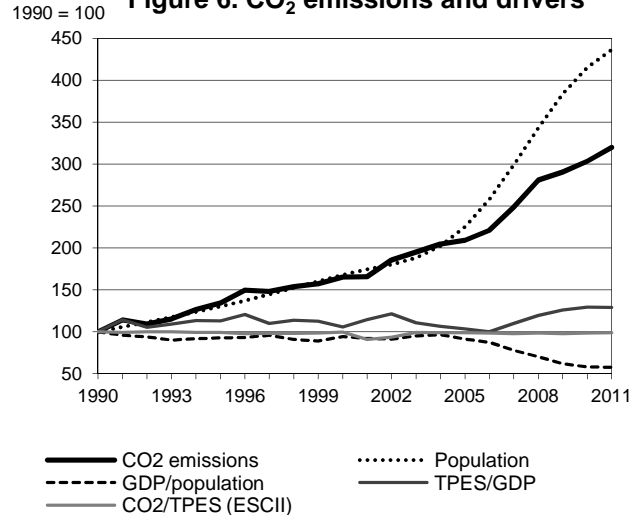


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

United Arab Emirates

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	51.88	69.64	85.59	108.40	150.58	157.38	165.89	219.7%
TPES (PJ)	855	1 159	1 421	1 810	2 540	2 642	2 768	223.7%
GDP (billion 2005 USD)	88.26	106.24	139.12	180.62	208.23	211.21	221.56	151.0%
GDP PPP (billion 2005 USD)	132.94	160.02	209.55	272.06	313.65	318.14	333.73	151.0%
Population (millions)	1.81	2.35	3.03	4.07	6.94	7.51	7.89	336.2%
CO ₂ / TPES (tCO ₂ per TJ)	60.7	60.1	60.2	59.9	59.3	59.6	59.9	-1.2%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.59	0.66	0.62	0.60	0.72	0.75	0.75	27.4%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.39	0.44	0.41	0.40	0.48	0.49	0.50	27.4%
CO ₂ / population (tCO ₂ per capita)	28.68	29.65	28.22	26.64	21.70	20.95	21.02	-26.7%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	134	165	209	290	303	320	219.7%
Population	100	130	168	225	384	415	436	336.2%
GDP per population (GDP per capita)	100	93	94	91	62	58	58	-42.4%
Energy intensity (TPES/GDP)	100	113	105	103	126	129	129	28.9%
Carbon intensity: ESCII (CO ₂ /TPES)	100	99	99	99	98	98	99	-1.2%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	4.85	38.96	122.07	-	165.89	219.7%
Main activity producer elec. and heat	-	2.01	57.51	-	59.52	368.7%
Unallocated autoproducers	-	-	-	-	-	-
Other energy industry own use	-	0.68	1.48	-	2.16	135.0%
Manufacturing industries and construction	4.85	4.68	63.08	-	72.62	171.0%
Transport	-	30.92	-	-	30.92	176.8%
<i>of which: road</i>	-	29.19	-	-	29.19	161.3%
Other	-	0.67	-	-	0.67	121.6%
<i>of which: residential</i>	-	0.67	-	-	0.67	121.6%
Reference Approach	4.85	30.24	122.07	-	157.16	211.2%
Diff. due to losses and/or transformation	-	- 8.72	-	-	- 8.72	
Statistical differences	-	0.00	- 0.00	-	0.00	
<i>Memo: international marine bunkers</i>	-	43.53	-	-	43.53	129.2%
<i>Memo: international aviation bunkers</i>	-	9.80	-	-	9.80	0.0%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Manufacturing industries - gas	63.08	209.0%	30.8	30.8
Main activity prod. elec. and heat - gas	57.51	376.0%	28.1	58.8
Road - oil	29.19	161.3%	14.2	73.1
Manufacturing industries - coal/peat	4.85	x	2.4	75.5
Manufacturing industries - oil	4.68	-26.6%	2.3	77.7
Main activity prod. elec. and heat - oil	2.01	226.7%	1.0	78.7
Other transport - oil	1.73	x	0.8	79.6
Other energy industry own use - gas	1.48	136.6%	0.7	80.3
Other energy industry own use - oil	0.68	131.5%	0.3	80.6
<i>Memo: total CO₂ from fuel combustion</i>	<i>165.89</i>	<i>219.7%</i>	<i>81.0</i>	<i>81.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

United Kingdom

Figure 1. CO₂ emissions by fuel

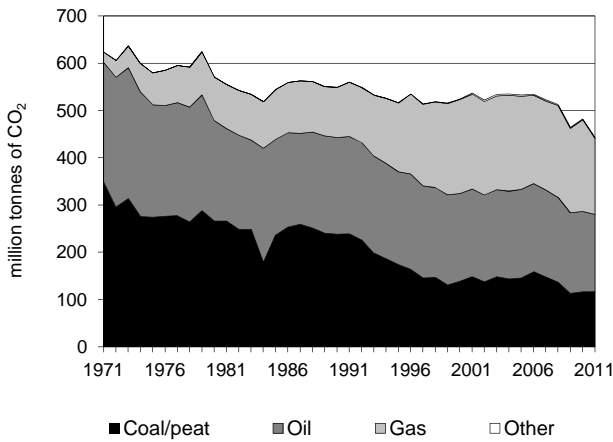


Figure 2. CO₂ emissions by sector

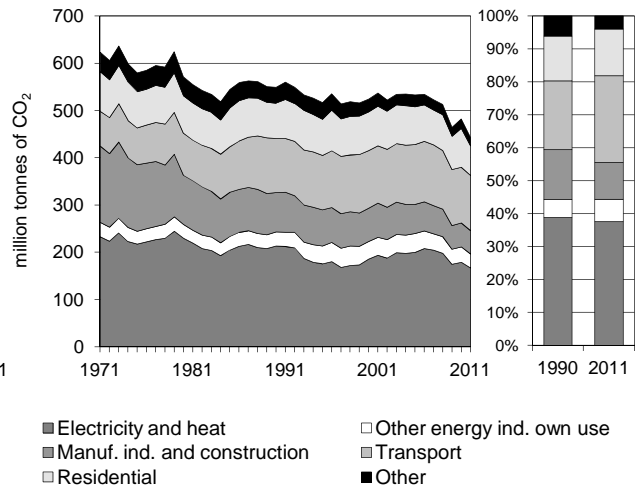


Figure 3. Reference vs Sectoral Approach

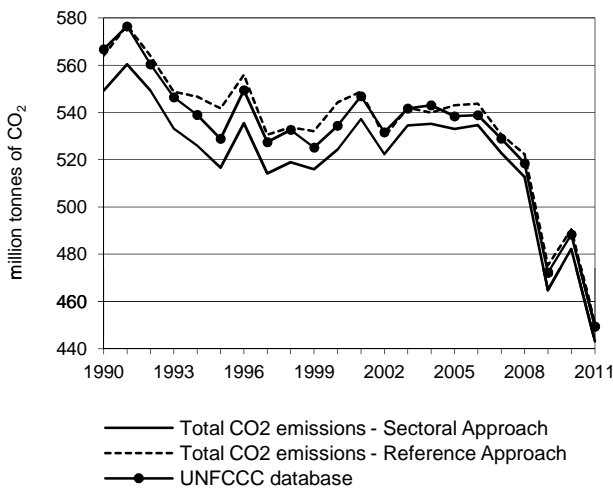


Figure 4. Electricity generation by fuel

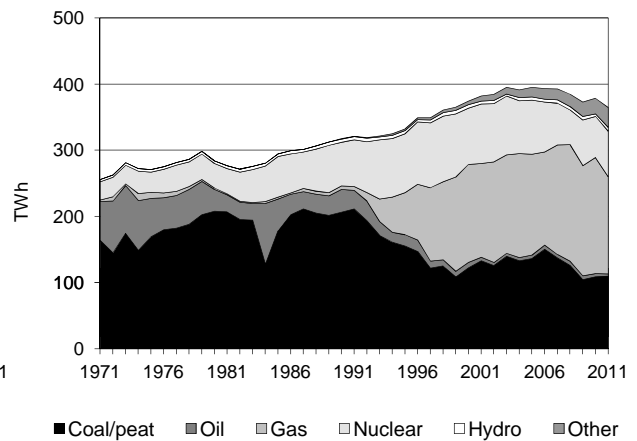


Figure 5. Changes in selected indicators *

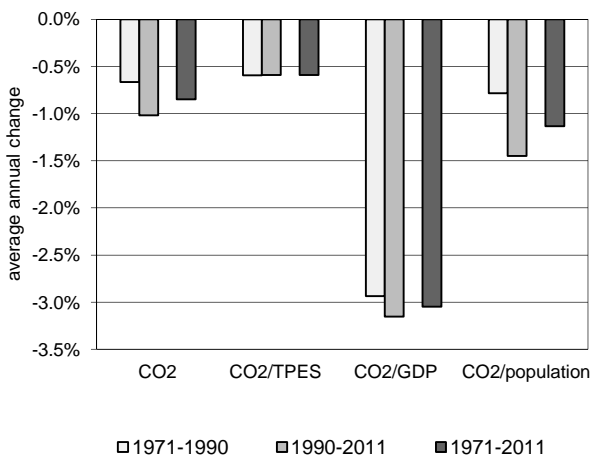
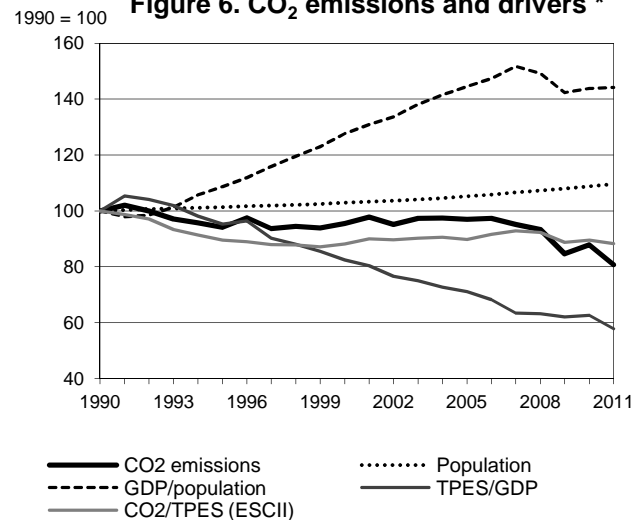


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

United Kingdom

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	549.25	516.60	524.29	532.94	464.75	482.18	443.01	-19.3%
TPES (PJ)	8 621	9 055	9 334	9 321	8 226	8 450	7 874	-8.7%
GDP (billion 2005 USD)	1 510.32	1 664.31	1 984.06	2 295.85	2 321.41	2 363.18	2 386.63	58.0%
GDP PPP (billion 2005 USD)	1 305.73	1 438.86	1 715.31	1 984.85	2 006.95	2 043.06	2 063.34	58.0%
Population (millions)	57.24	58.03	58.89	60.24	61.79	62.26	62.74	9.6%
CO ₂ / TPES (tCO ₂ per TJ)	63.7	57.1	56.2	57.2	56.5	57.1	56.3	-11.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.36	0.31	0.26	0.23	0.20	0.20	0.19	-49.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.42	0.36	0.31	0.27	0.23	0.24	0.21	-49.0%
CO ₂ / population (tCO ₂ per capita)	9.60	8.90	8.90	8.85	7.52	7.74	7.06	-26.4%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	94	95	97	85	88	81	-19.3%
Population	100	101	103	105	108	109	110	9.6%
GDP per population (GDP per capita)	100	109	128	144	142	144	144	44.2%
Energy intensity (TPES/GDP)	100	95	82	71	62	63	58	-42.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	90	88	90	89	90	88	-11.7%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	116.33	163.96	160.77	1.95	443.01	-19.3%
Main activity producer elec. and heat	93.47	1.06	46.83	-	141.36	-29.4%
Unallocated autoproducers	8.83	1.75	13.01	1.60	25.19	88.3%
Other energy industry own use	3.54	15.76	10.85	-	30.15	2.4%
Manufacturing industries and construction	7.92	17.47	23.48	0.26	49.13	-41.2%
Transport	0.03	116.74	-	-	116.77	2.1%
<i>of which: road</i>	-	107.80	-	-	107.80	1.1%
Other	2.52	11.17	66.61	0.09	80.40	-25.8%
<i>of which: residential</i>	2.44	7.30	52.97	0.02	62.72	-16.3%
Reference Approach	117.83	167.29	163.54	1.95	450.60	-20.1%
Diff. due to losses and/or transformation	1.99	3.59	2.64	-	8.23	
Statistical differences	-0.49	-0.27	0.12	0.00	-0.64	
<i>Memo: international marine bunkers</i>	-	7.08	-	-	7.08	-9.8%
<i>Memo: international aviation bunkers</i>	-	33.11	-	-	33.11	75.6%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	107.80	1.1%	19.6	19.6
Main activity prod. elec. and heat - coal/peat	93.47	-48.1%	17.0	36.6
Residential - gas	52.97	-2.5%	9.6	46.2
Main activity prod. elec. and heat - gas ****	46.83	x	8.5	54.7
Manufacturing industries - gas	23.48	-12.2%	4.3	59.0
Manufacturing industries - oil	17.47	-33.9%	3.2	62.2
Other energy industry own use - oil	15.76	-21.1%	2.9	65.0
Non-specified other - gas	13.64	-11.3%	2.5	67.5
Unallocated autoproducers - gas ****	13.01	400.0%	2.4	69.9
<i>Memo: total CO₂ from fuel combustion</i>	<i>443.01</i>	<i>-19.3%</i>	<i>80.5</i>	<i>80.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

**** For reasons of confidentiality, gas for main activity producer electricity is included in autoproducers for 1990.

United States

Figure 1. CO₂ emissions by fuel

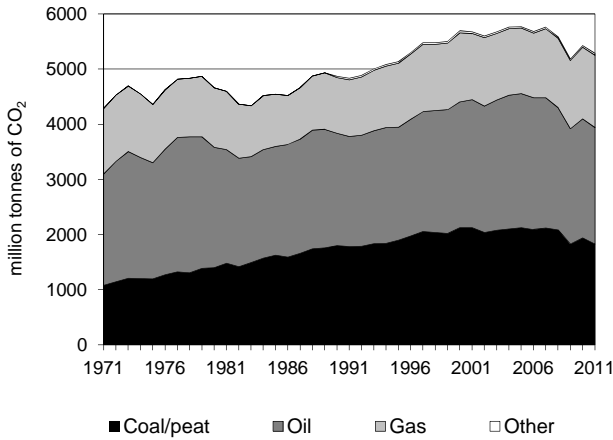


Figure 2. CO₂ emissions by sector

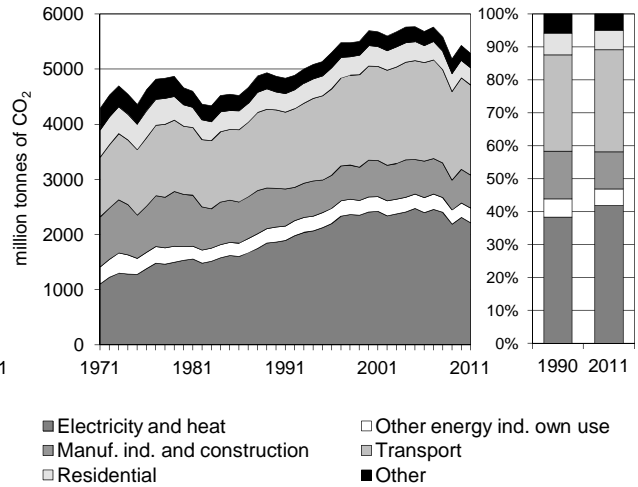


Figure 3. Reference vs Sectoral Approach

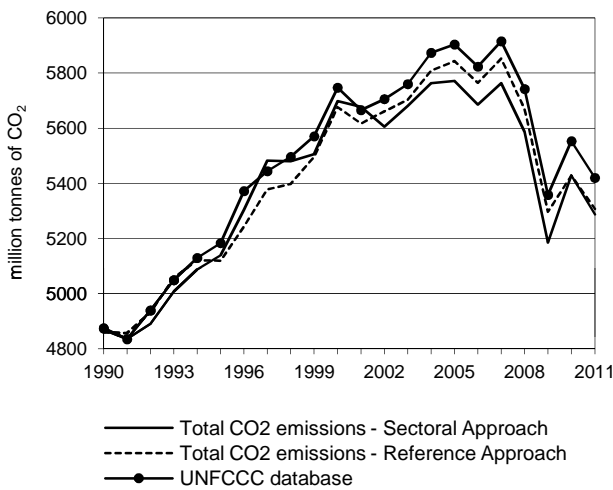


Figure 4. Electricity generation by fuel

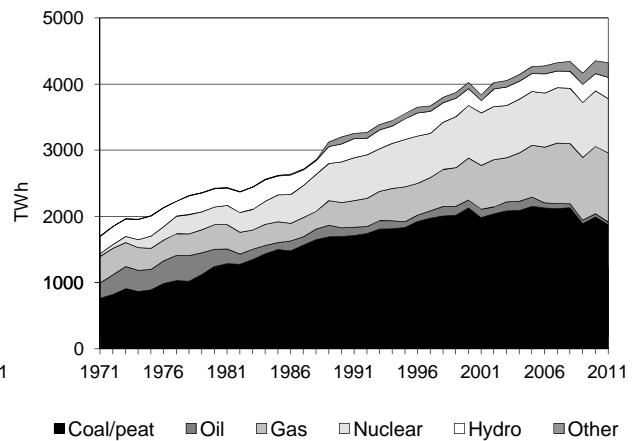


Figure 5. Changes in selected indicators *

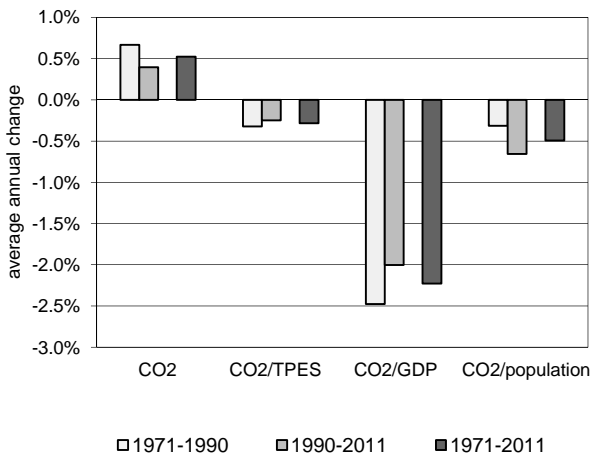
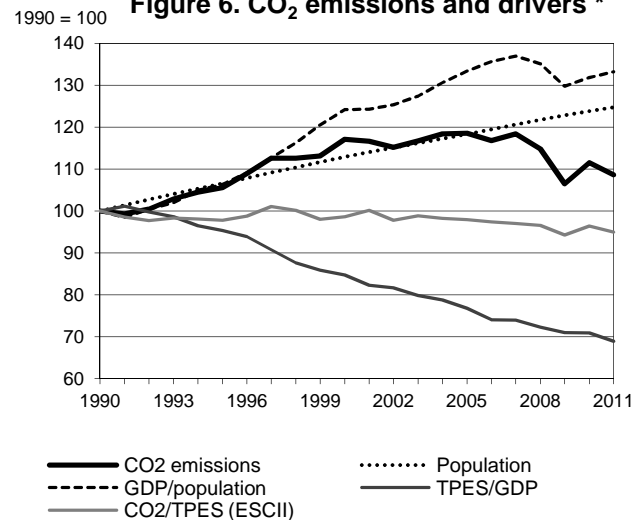


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

United States

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	4 868.7	5 138.7	5 698.1	5 771.7	5 184.9	5 429.4	5 287.2	8.6%
TPES (PJ)	80 177	86 550	95 180	97 086	90 622	92 759	91 741	14.4%
GDP (billion 2005 USD)	7 962.6	9 019.9	11 158.1	12 564.3	12 690.0	12 992.0	13 225.9	66.1%
GDP PPP (billion 2005 USD)	7 962.6	9 019.9	11 158.1	12 564.3	12 690.0	12 992.0	13 225.9	66.1%
Population (millions)	250.2	266.6	282.4	296.0	307.2	309.8	312.0	24.7%
CO ₂ / TPES (tCO ₂ per TJ)	60.7	59.4	59.9	59.4	57.2	58.5	57.6	-5.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.61	0.57	0.51	0.46	0.41	0.42	0.40	-34.6%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.61	0.57	0.51	0.46	0.41	0.42	0.40	-34.6%
CO ₂ / population (tCO ₂ per capita)	19.46	19.28	20.18	19.50	16.88	17.53	16.94	-12.9%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	106	117	119	106	112	109	8.6%
Population	100	107	113	118	123	124	125	24.7%
GDP per population (GDP per capita)	100	106	124	133	130	132	133	33.2%
Energy intensity (TPES/GDP)	100	95	85	77	71	71	69	-31.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	98	99	98	94	96	95	-5.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	1 830.3	2 111.2	1 314.7	30.9	5 287.2	8.6%
Main activity producer elec. and heat	1 696.0	25.3	409.8	15.5	2 146.6	21.0%
Unallocated autoproducers	19.6	5.2	33.6	7.1	65.4	-29.0%
Other energy industry own use	9.7	141.8	114.5	-	266.0	-2.6%
Manufacturing industries and construction	99.9	196.2	294.1	7.6	597.9	-14.9%
Transport	-	1 599.3	38.8	-	1 638.1	15.4%
<i>of which: road</i>	-	1 403.9	1.7	-	1 405.6	23.5%
Other	5.1	143.4	423.9	0.8	573.2	-5.6%
<i>of which: residential</i>	-	57.2	255.3	-	312.5	-3.5%
Reference Approach	1 876.4	2 077.8	1 322.3	30.9	5 307.4	9.2%
Diff. due to losses and/or transformation	15.9	- 57.9	- 2.6	-	- 44.6	
Statistical differences	30.2	24.5	10.2	-	64.9	
<i>Memo: international marine bunkers</i>	-	83.5	-	-	83.5	-8.0%
<i>Memo: international aviation bunkers</i>	-	64.7	-	-	64.7	66.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	1 696.0	10.6%	26.0	26.0
Road - oil	1 403.9	23.4%	21.5	47.4
Main activity prod. elec. and heat - gas	409.8	168.4%	6.3	53.7
Manufacturing industries - gas	294.1	5.6%	4.5	58.2
Residential - gas	255.3	6.5%	3.9	62.1
Manufacturing industries - oil	196.2	-9.6%	3.0	65.1
Other transport - oil	195.5	-20.6%	3.0	68.1
Non-specified other - gas	168.7	17.8%	2.6	70.7
Other energy industry own use - oil	141.8	-14.7%	2.2	72.9
<i>Memo: total CO₂ from fuel combustion</i>	<i>5 287.2</i>	<i>8.6%</i>	<i>80.9</i>	<i>80.9</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Uruguay

Figure 1. CO₂ emissions by fuel

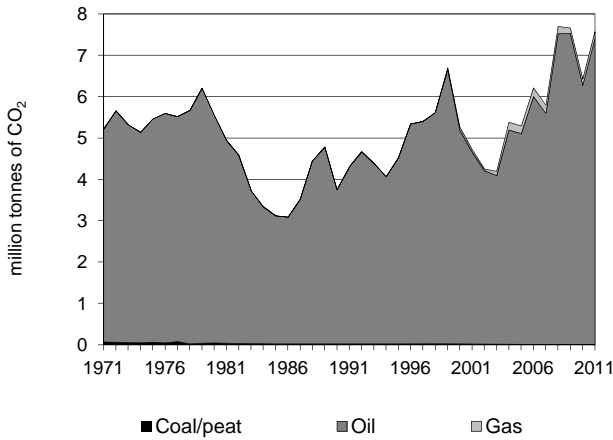


Figure 2. CO₂ emissions by sector

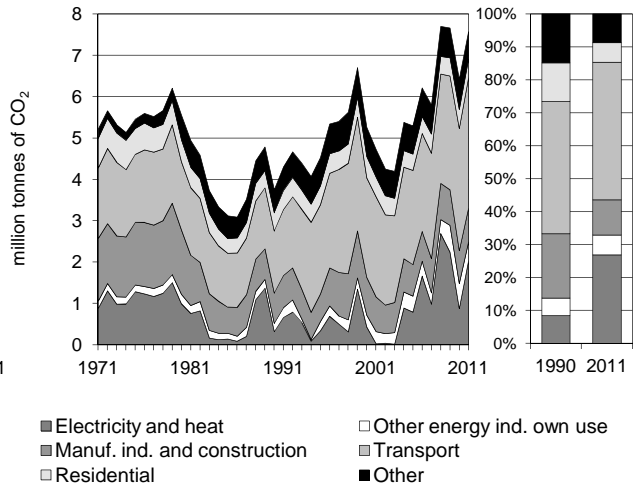


Figure 3. Reference vs Sectoral Approach

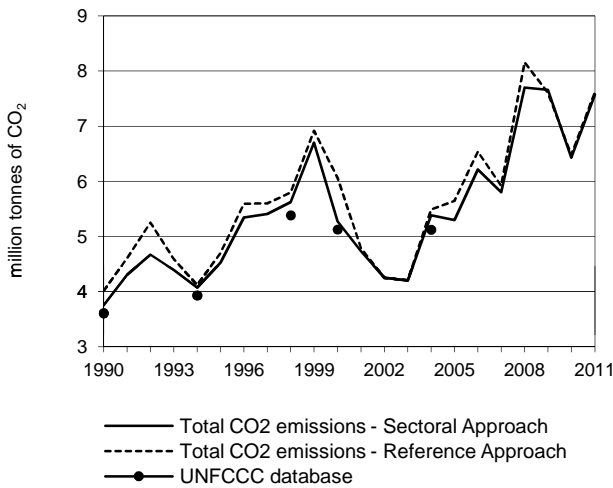


Figure 4. Electricity generation by fuel

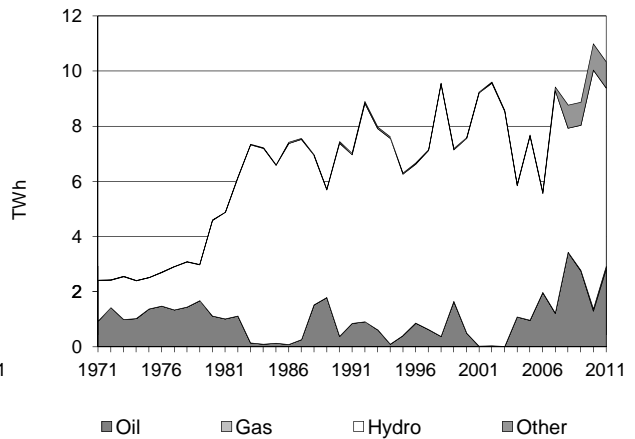


Figure 5. Changes in selected indicators *

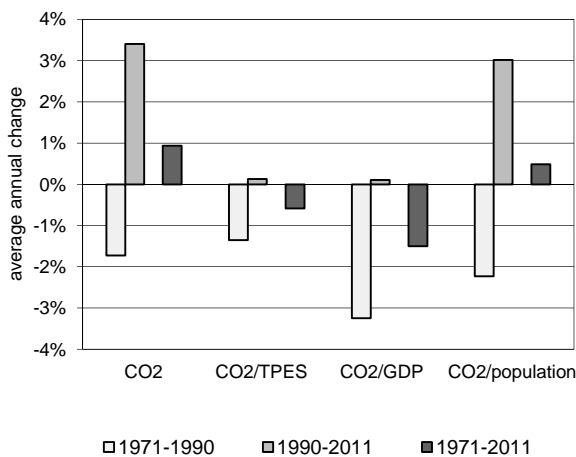
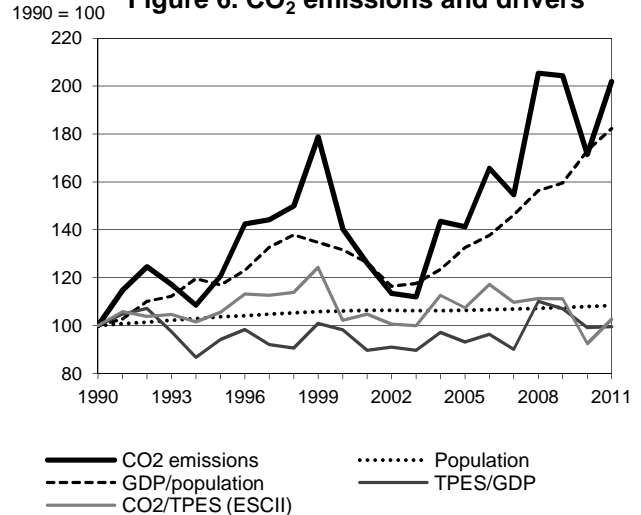


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Uruguay

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	3.75	4.52	5.26	5.29	7.66	6.43	7.57	102.0%
TPES (PJ)	94	108	129	124	173	175	185	96.8%
GDP (billion 2005 USD)	12.31	14.94	17.21	17.36	21.14	23.02	24.33	97.6%
GDP PPP (billion 2005 USD)	22.70	27.54	31.72	32.01	38.97	42.43	44.85	97.6%
Population (millions)	3.11	3.22	3.30	3.31	3.35	3.36	3.37	8.4%
CO ₂ / TPES (tCO ₂ per TJ)	39.8	42.0	40.7	42.8	44.3	36.8	40.8	2.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.30	0.30	0.31	0.31	0.36	0.28	0.31	2.2%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.17	0.16	0.17	0.17	0.20	0.15	0.17	2.2%
CO ₂ / population (tCO ₂ per capita)	1.21	1.40	1.59	1.60	2.29	1.91	2.25	86.4%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	121	140	141	204	171	202	102.0%
Population	100	104	106	106	108	108	108	8.4%
GDP per population (GDP per capita)	100	117	132	133	160	173	182	82.3%
Energy intensity (TPES/GDP)	100	94	98	93	107	99	100	-0.4%
Carbon intensity: ESCII (CO ₂ /TPES)	100	106	102	107	111	92	103	2.7%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.00	7.40	0.17	-	7.57	102.0%
Main activity producer elec. and heat	-	1.97	0.05	-	2.02	582.6%
Unallocated autoproducers	-	0.02	-	-	0.02	-14.4%
Other energy industry own use	-	0.45	0.00	-	0.45	127.1%
Manufacturing industries and construction	0.00	0.78	0.03	-	0.81	11.4%
Transport	-	3.16	-	-	3.16	110.1%
<i>of which: road</i>	-	3.14	-	-	3.14	119.9%
Other	-	1.02	0.09	-	1.11	11.2%
<i>of which: residential</i>	-	0.40	0.05	-	0.45	1.3%
Reference Approach	0.00	7.46	0.17	-	7.63	89.9%
Diff. due to losses and/or transformation	-	0.06	0.00	-	0.06	
Statistical differences	-	-0.01	0.00	-	-0.01	
<i>Memo: international marine bunkers</i>	-	1.17	-	-	1.17	218.9%
<i>Memo: international aviation bunkers</i>	-	0.28	-	-	0.28	x

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	3.14	119.9%	9.1	9.1
Main activity prod. elec. and heat - oil	1.97	567.2%	5.7	14.8
Manufacturing industries - oil	0.78	7.5%	2.2	17.0
Non-specified other - oil	0.62	13.5%	1.8	18.8
Other energy industry own use - oil	0.45	125.6%	1.3	20.1
Residential - oil	0.40	-7.1%	1.2	21.2
Residential - gas	0.05	x	0.1	21.4
Main activity prod. elec. and heat - gas	0.05	x	0.1	21.5
Non-specified other - gas	0.04	x	0.1	21.6
<i>Memo: total CO₂ from fuel combustion</i>	<i>7.57</i>	<i>102.0%</i>	<i>21.8</i>	<i>21.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Uzbekistan

Figure 1. CO₂ emissions by fuel

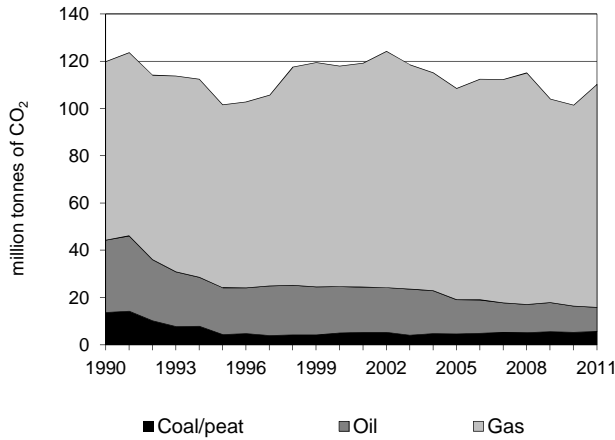


Figure 2. CO₂ emissions by sector

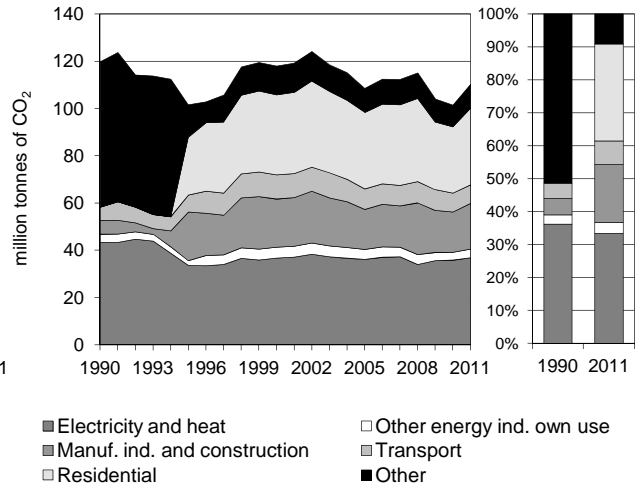


Figure 3. Reference vs Sectoral Approach

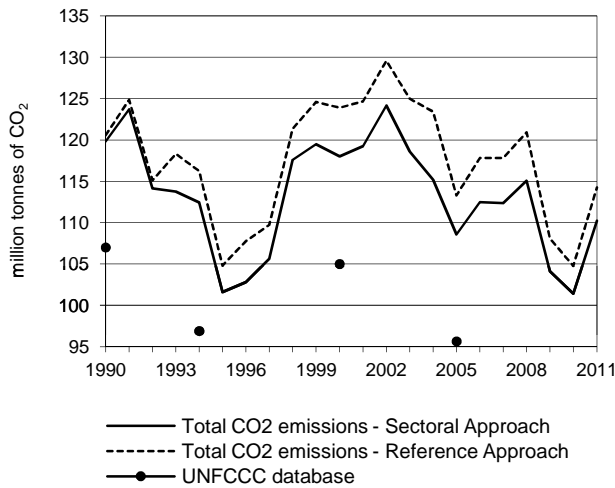


Figure 4. Electricity generation by fuel

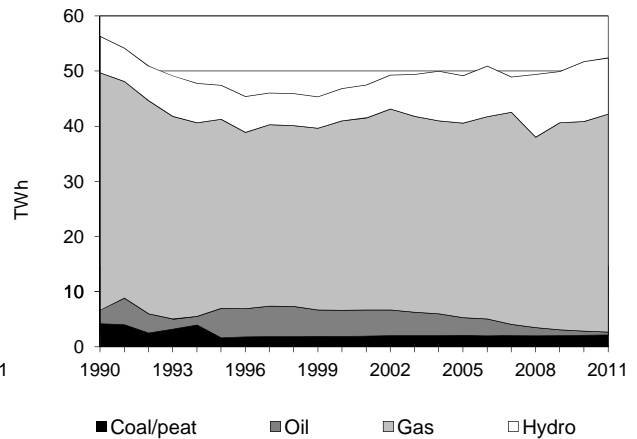


Figure 5. Changes in selected indicators *

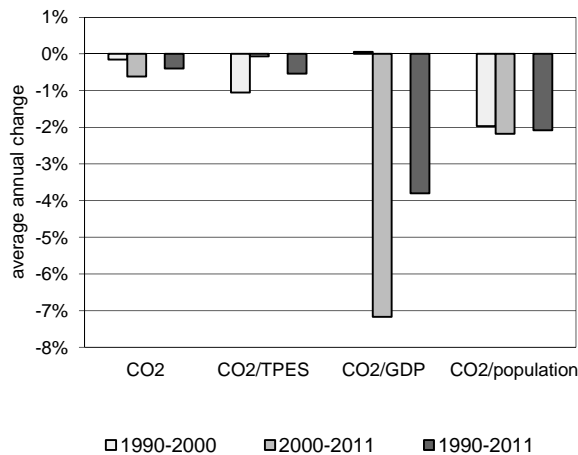
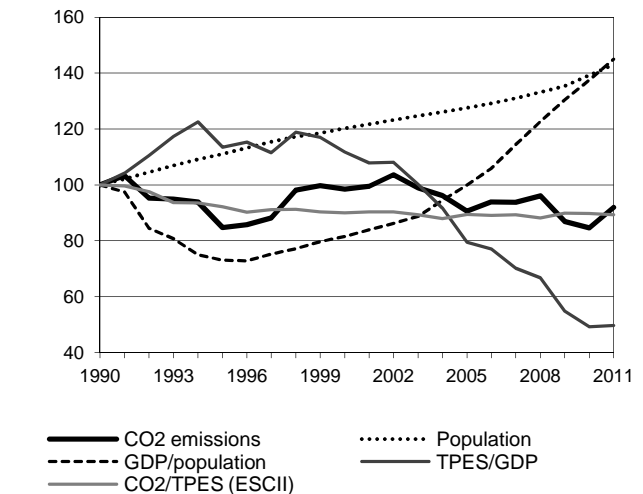


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Uzbekistan

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	119.83	101.58	118.02	108.55	104.11	101.42	110.22	-8.0%
TPES (PJ)	1 941	1 786	2 125	1 966	1 877	1 832	1 999	3.0%
GDP (billion 2005 USD)	11.22	9.10	11.00	14.31	19.81	21.49	23.28	107.4%
GDP PPP (billion 2005 USD)	41.07	33.31	40.24	52.36	72.49	78.65	85.18	107.4%
Population (millions)	20.51	22.79	24.65	26.17	27.77	28.56	29.34	43.1%
CO ₂ / TPES (tCO ₂ per TJ)	61.7	56.9	55.5	55.2	55.5	55.4	55.1	-10.7%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	10.68	11.16	10.73	7.59	5.26	4.72	4.74	-55.7%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	2.92	3.05	2.93	2.07	1.44	1.29	1.29	-55.7%
CO ₂ / population (tCO ₂ per capita)	5.84	4.46	4.79	4.15	3.75	3.55	3.76	-35.7%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	85	98	91	87	85	92	-8.0%
Population	100	111	120	128	135	139	143	43.1%
GDP per population (GDP per capita)	100	73	82	100	130	138	145	45.0%
Energy intensity (TPES/GDP)	100	113	112	79	55	49	50	-50.3%
Carbon intensity: ESCII (CO ₂ /TPES)	100	92	90	89	90	90	89	-10.7%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	5.64	10.19	94.40	-	110.22	-8.0%
Main activity producer elec. and heat	3.88	0.55	32.32	-	36.76	-15.3%
Unallocated autoproducers	-	0.00	0.07	-	0.07	x
Other energy industry own use	-	0.41	3.27	-	3.67	8.1%
Manufacturing industries and construction	0.38	1.34	17.63	-	19.35	231.3%
Transport	-	4.87	3.05	-	7.93	39.9%
<i>of which: road</i>	-	4.24	0.13	-	4.38	-19.5%
Other	1.38	3.01	38.05	-	42.44	-31.0%
<i>of which: residential</i>	0.07	0.87	31.43	-	32.37	x
Reference Approach	5.69	10.67	97.89	-	114.25	-5.2%
Diff. due to losses and/or transformation	0.06	0.47	3.50	-	4.02	
Statistical differences	-	0.01	0.00	-	0.01	
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	-	-	-	-	-

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - gas	32.32	19.1%	18.3	18.3
Residential - gas	31.43	x	17.8	36.1
Manufacturing industries - gas	17.63	x	10.0	46.1
Non-specified other - gas	6.62	-85.6%	3.8	49.9
Road - oil	4.24	-22.0%	2.4	52.3
Main activity prod. elec. and heat - coal/peat	3.88	-55.8%	2.2	54.5
Other energy industry own use - gas	3.27	35.2%	1.9	56.3
Other transport - gas	2.92	x	1.7	58.0
Non-specified other - oil	2.13	-79.8%	1.2	59.2
<i>Memo: total CO₂ from fuel combustion</i>	<i>110.22</i>	<i>-8.0%</i>	<i>62.5</i>	<i>62.5</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Venezuela

Figure 1. CO₂ emissions by fuel

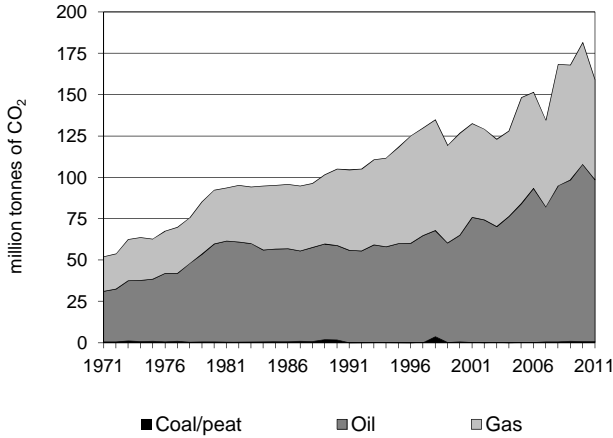


Figure 2. CO₂ emissions by sector

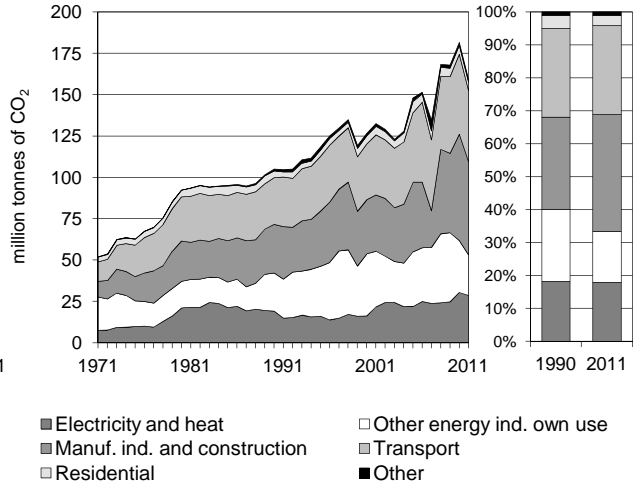


Figure 3. Reference vs Sectoral Approach

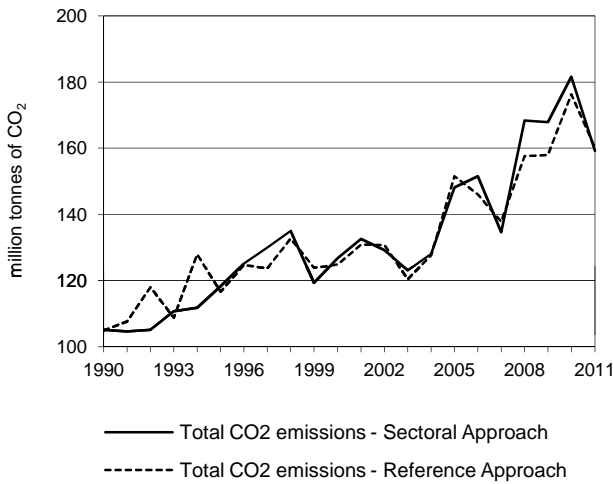


Figure 4. Electricity generation by fuel

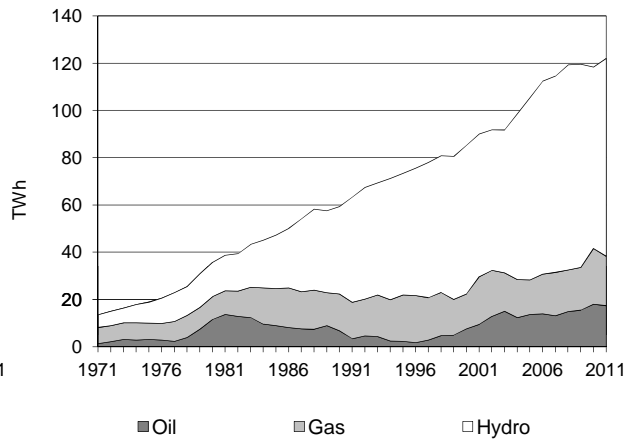


Figure 5. Changes in selected indicators *

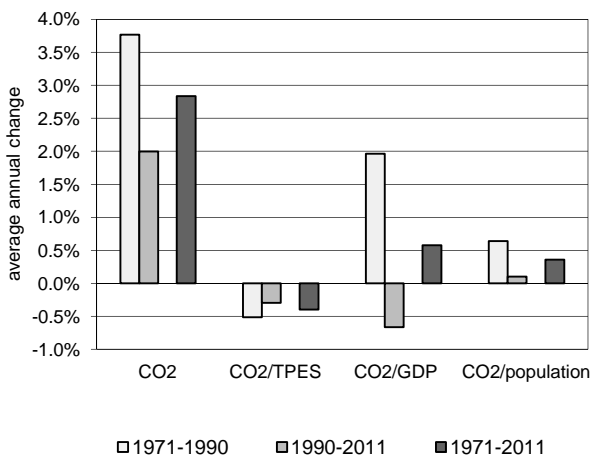
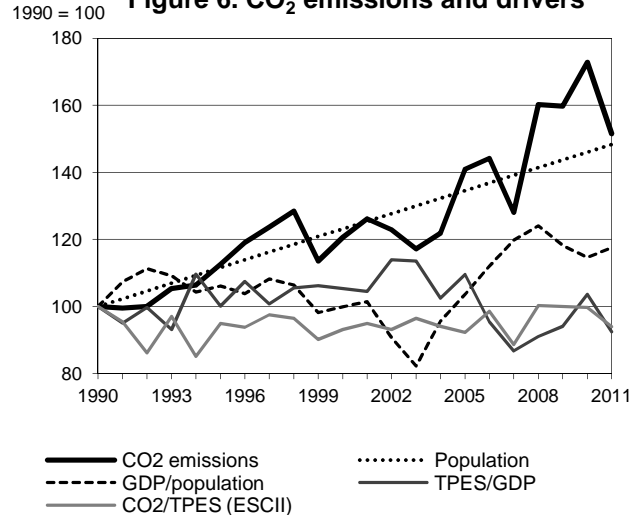


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Venezuela

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	105.09	118.29	126.74	148.16	167.89	181.59	159.22	51.5%
TPES (PJ)	1 824	2 161	2 362	2 787	2 914	3 161	2 939	61.2%
GDP (billion 2005 USD)	104.32	123.57	128.28	145.51	177.19	174.55	181.84	74.3%
GDP PPP (billion 2005 USD)	189.09	223.99	232.52	263.76	321.18	316.40	329.61	74.3%
Population (millions)	19.75	22.04	24.31	26.58	28.38	28.83	29.28	48.2%
CO ₂ / TPES (tCO ₂ per TJ)	57.6	54.7	53.6	53.2	57.6	57.4	54.2	-6.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	1.01	0.96	0.99	1.02	0.95	1.04	0.88	-13.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.56	0.53	0.55	0.56	0.52	0.57	0.48	-13.1%
CO ₂ / population (tCO ₂ per capita)	5.32	5.37	5.21	5.57	5.92	6.30	5.44	2.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	113	121	141	160	173	152	51.5%
Population	100	112	123	135	144	146	148	48.2%
GDP per population (GDP per capita)	100	106	100	104	118	115	118	17.6%
Energy intensity (TPES/GDP)	100	100	105	110	94	104	92	-7.5%
Carbon intensity: ESCII (CO ₂ /TPES)	100	95	93	92	100	100	94	-6.0%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	0.80	97.75	60.67	-	159.22	51.5%
Main activity producer elec. and heat	-	15.89	11.73	-	27.62	81.3%
Unallocated autoproducers	-	-	0.99	-	0.99	-74.7%
Other energy industry own use	-	9.41	15.14	-	24.55	6.6%
Manufacturing industries and construction	0.80	25.53	30.05	-	56.38	91.9%
Transport	-	42.96	0.02	-	42.98	52.0%
<i>of which: road</i>	-	42.96	-	-	42.96	52.1%
Other	-	3.97	2.75	-	6.71	27.2%
<i>of which: residential</i>	-	2.90	2.11	-	5.02	21.2%
Reference Approach	0.80	98.63	60.67	-	160.10	52.6%
Diff. due to losses and/or transformation	-	1.38	-	-	1.38	
Statistical differences	-	-0.50	-0.00	-	-0.50	
<i>Memo: international marine bunkers</i>	-	3.08	-	-	3.08	23.1%
<i>Memo: international aviation bunkers</i>	-	0.42	-	-	0.42	-58.9%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	42.96	52.1%	17.6	17.6
Manufacturing industries - gas	30.05	66.3%	12.3	29.9
Manufacturing industries - oil	25.53	168.6%	10.5	40.4
Main activity prod. elec. and heat - oil	15.89	180.9%	6.5	46.9
Other energy industry own use - gas	15.14	9.7%	6.2	53.1
Main activity prod. elec. and heat - gas	11.73	22.4%	4.8	57.9
Other energy industry own use - oil	9.41	2.0%	3.9	61.8
Residential - oil	2.90	-21.6%	1.2	63.0
Residential - gas	2.11	381.9%	0.9	63.9
<i>Memo: total CO₂ from fuel combustion</i>	<i>159.22</i>	<i>51.5%</i>	<i>65.3</i>	<i>65.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Vietnam *

Figure 1. CO₂ emissions by fuel

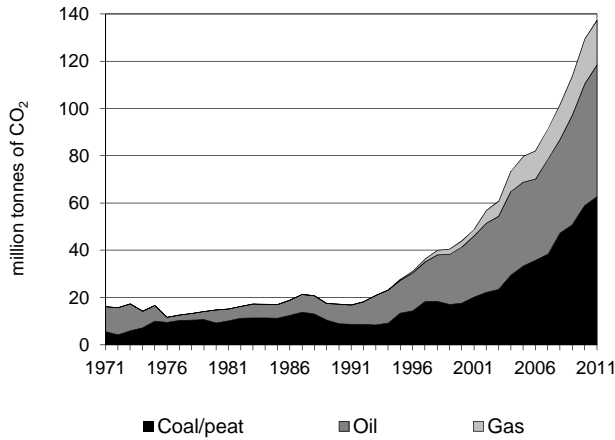


Figure 2. CO₂ emissions by sector

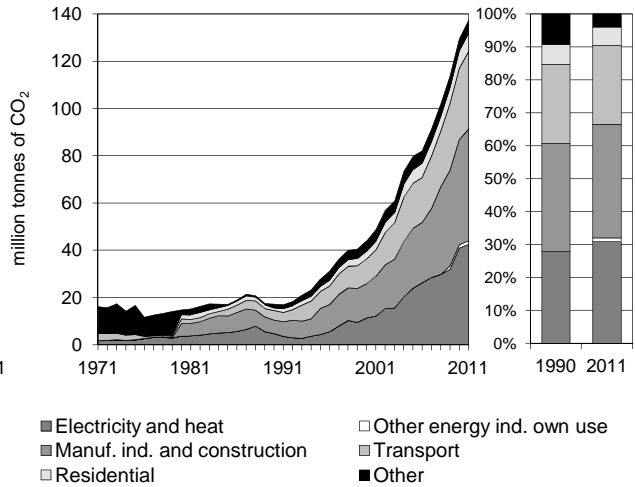


Figure 3. Reference vs Sectoral Approach

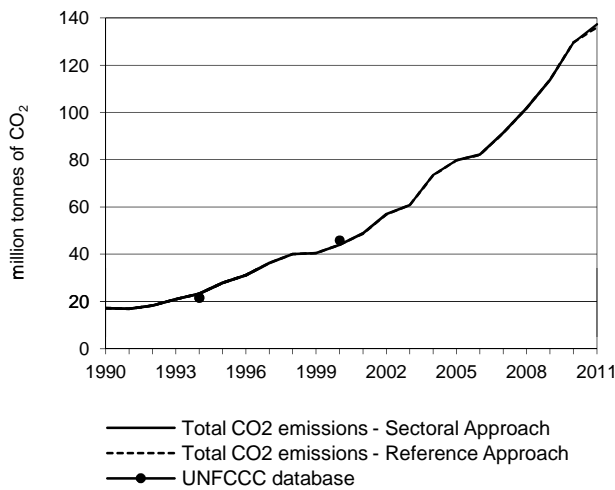


Figure 4. Electricity generation by fuel

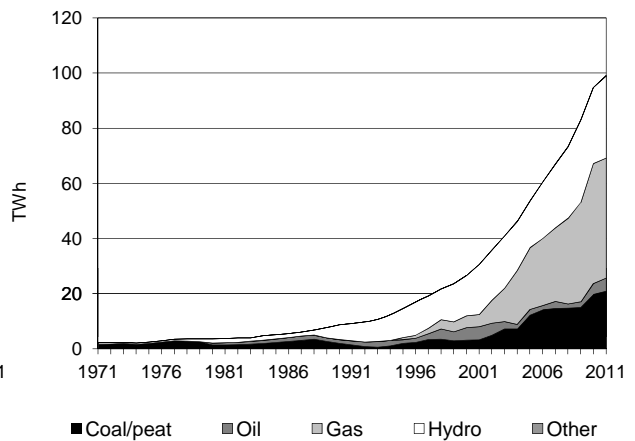


Figure 5. Changes in selected indicators **

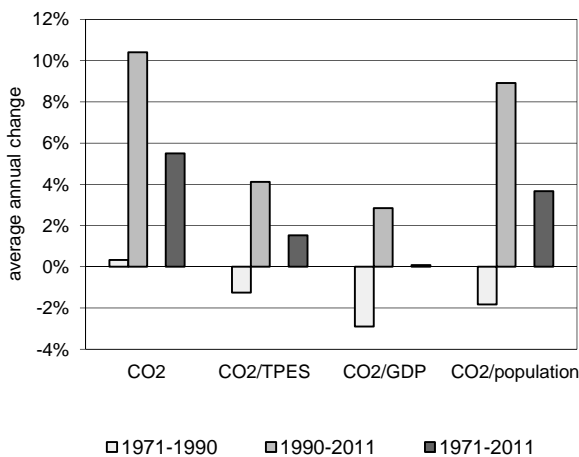
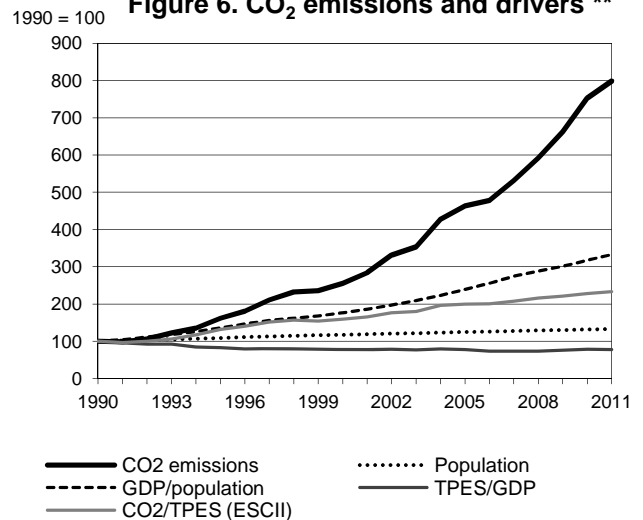


Figure 6. CO₂ emissions and drivers **



* A detailed sectoral breakdown is available starting in 1980.

** Based on GDP in 2005 USD, using purchasing power parities.

Vietnam

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	17.20	27.79	44.01	79.75	113.78	129.43	137.36	698.6%
TPES (PJ)	748	916	1 203	1 736	2 238	2 467	2 563	242.6%
GDP (billion 2005 USD)	17.75	26.33	36.85	52.92	69.55	74.27	78.64	343.0%
GDP PPP (billion 2005 USD)	59.74	88.61	123.99	178.08	234.05	249.92	264.63	343.0%
Population (millions)	66.02	72.00	77.63	82.39	86.03	86.93	87.84	33.1%
CO ₂ / TPES (tCO ₂ per TJ)	23.0	30.3	36.6	46.0	50.8	52.5	53.6	133.1%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.97	1.06	1.19	1.51	1.64	1.74	1.75	80.3%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.29	0.31	0.36	0.45	0.49	0.52	0.52	80.3%
CO ₂ / population (tCO ₂ per capita)	0.26	0.39	0.57	0.97	1.32	1.49	1.56	500.3%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	162	256	464	662	753	799	698.6%
Population	100	109	118	125	130	132	133	33.1%
GDP per population (GDP per capita)	100	136	177	239	301	318	333	232.9%
Energy intensity (TPES/GDP)	100	83	77	78	76	79	77	-22.7%
Carbon intensity: ESCII (CO ₂ /TPES)	100	132	159	200	221	228	233	133.1%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	62.57	55.91	18.88	-	137.36	698.6%
Main activity producer elec. and heat	20.16	2.16	17.25	-	39.57	725.7%
Unallocated autoproducers	0.50	1.86	0.58	-	2.93	x
Other energy industry own use	-	1.53	-	-	1.53	x
Manufacturing industries and construction	35.13	11.09	1.06	-	47.27	737.9%
Transport	-	32.88	-	-	32.88	697.4%
<i>of which: road</i>	-	32.00	-	-	32.00	753.9%
Other	6.78	6.39	-	-	13.17	398.5%
<i>of which: residential</i>	5.14	2.58	-	-	7.72	626.1%
Reference Approach	62.57	56.11	17.40	-	136.08	691.0%
Diff. due to losses and/or transformation	-	0.20	-	-	0.20	
Statistical differences	- 0.00	- 0.01	- 1.48	-	- 1.49	
<i>Memo: international marine bunkers</i>	-	1.12	-	-	1.12	+
<i>Memo: international aviation bunkers</i>	-	2.39	-	-	2.39	x

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Manufacturing industries - coal/peat	35.13	746.1%	11.3	11.3
Road - oil	32.00	753.9%	10.3	21.7
Main activity prod. elec. and heat - coal/peat	20.16	463.0%	6.5	28.2
Main activity prod. elec. and heat - gas	17.25	+	5.6	33.7
Manufacturing industries - oil	11.09	644.2%	3.6	37.3
Residential - coal/peat	5.14	515.4%	1.7	39.0
Non-specified other - oil	3.81	206.7%	1.2	40.2
Residential - oil	2.58	+	0.8	41.0
Main activity prod. elec. and heat - oil	2.16	79.4%	0.7	41.7
<i>Memo: total CO₂ from fuel combustion</i>	<i>137.36</i>	<i>698.6%</i>	<i>44.3</i>	<i>44.3</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Yemen

Figure 1. CO₂ emissions by fuel

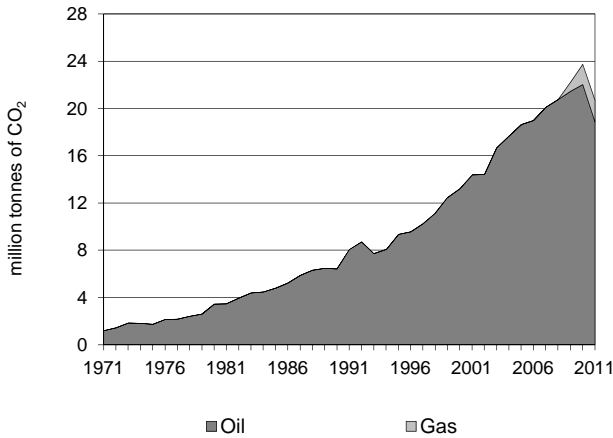


Figure 2. CO₂ emissions by sector

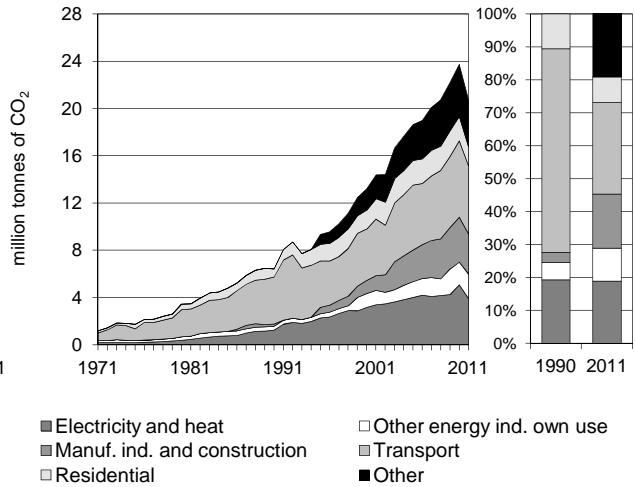


Figure 3. Reference vs Sectoral Approach

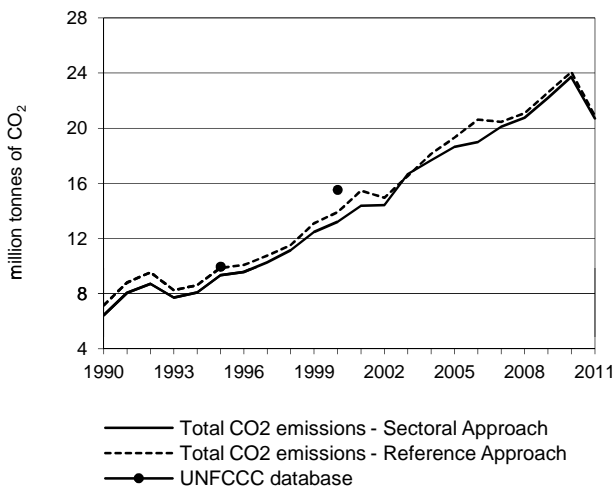


Figure 4. Electricity generation by fuel

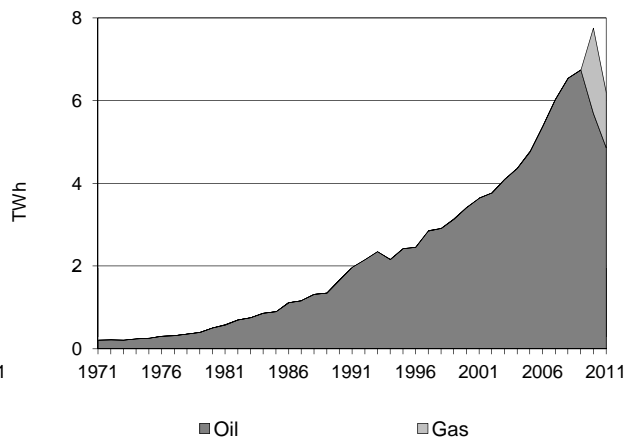


Figure 5. Changes in selected indicators *

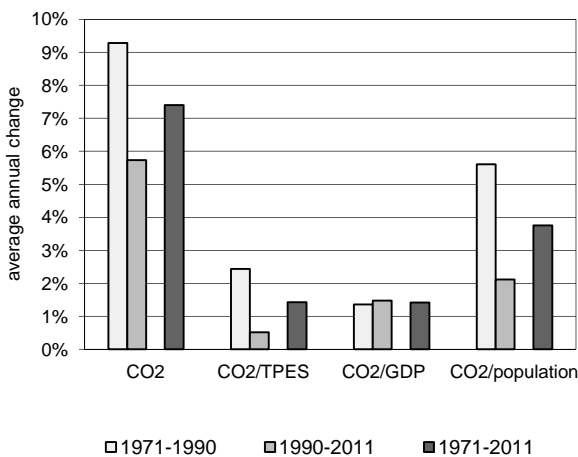
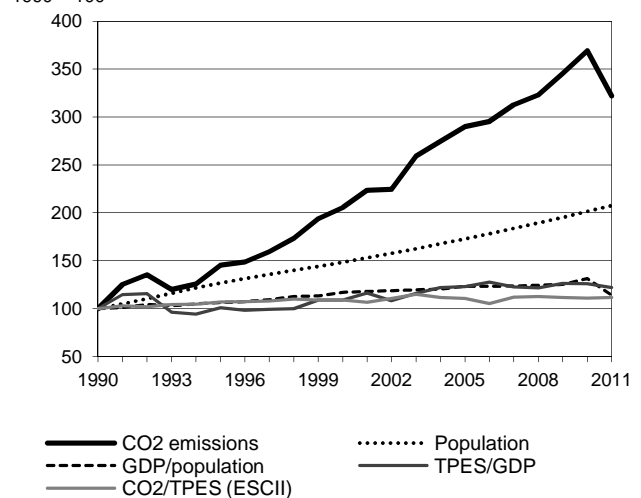


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Yemen

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	6.43	9.34	13.21	18.65	22.20	23.74	20.71	222.1%
TPES (PJ)	105	143	199	276	325	350	304	188.9%
GDP (billion 2005 USD)	7.86	10.60	13.63	16.75	19.23	20.77	18.59	136.6%
GDP PPP (billion 2005 USD)	21.66	29.21	37.57	46.17	52.99	57.24	51.24	136.6%
Population (millions)	11.95	15.15	17.72	20.65	23.33	24.05	24.80	107.6%
CO ₂ / TPES (tCO ₂ per TJ)	61.1	65.3	66.5	67.6	68.3	67.8	68.1	11.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.82	0.88	0.97	1.11	1.15	1.14	1.11	36.1%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.30	0.32	0.35	0.40	0.42	0.41	0.40	36.1%
CO ₂ / population (tCO ₂ per capita)	0.54	0.62	0.75	0.90	0.95	0.99	0.84	55.2%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	145	205	290	345	369	322	222.1%
Population	100	127	148	173	195	201	208	107.6%
GDP per population (GDP per capita)	100	106	117	123	125	131	114	14.0%
Energy intensity (TPES/GDP)	100	101	109	123	126	126	122	22.1%
Carbon intensity: ESCII (CO ₂ /TPES)	100	107	109	111	112	111	111	11.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	18.89	1.82	-	20.71	222.1%
Main activity producer elec. and heat	-	2.95	0.74	-	3.69	301.4%
Unallocated autoproducers	-	0.24	-	-	0.24	-26.1%
Other energy industry own use	-	0.98	1.08	-	2.06	508.3%
Manufacturing industries and construction	-	3.40	-	-	3.40	+
Transport	-	5.76	-	-	5.76	44.9%
<i>of which: road</i>	-	5.76	-	-	5.76	44.9%
Other	-	5.56	-	-	5.56	718.7%
<i>of which: residential</i>	-	1.61	-	-	1.61	136.5%
Reference Approach	-	19.07	1.82	-	20.89	192.4%
Diff. due to losses and/or transformation	-	0.18	-	-	0.18	
Statistical differences	-	-	-	-	-	
<i>Memo: international marine bunkers</i>	-	0.31	-	-	0.31	-74.6%
<i>Memo: international aviation bunkers</i>	-	0.20	-	-	0.20	12.8%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Road - oil	5.76	44.9%	15.8	15.8
Non-specified other - oil	3.96	x	10.9	26.7
Manufacturing industries - oil	3.40	+	9.4	36.1
Main activity prod. elec. and heat - oil	2.95	220.9%	8.1	44.2
Residential - oil	1.61	136.5%	4.4	48.6
Other energy industry own use - gas	1.08	x	3.0	51.6
Other energy industry own use - oil	0.98	189.8%	2.7	54.3
Main activity prod. elec. and heat - gas	0.74	x	2.0	56.3
Unallocated autoproducers - oil	0.24	-26.1%	0.7	57.0
<i>Memo: total CO₂ from fuel combustion</i>	<i>20.71</i>	<i>222.1%</i>	<i>57.0</i>	<i>57.0</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Zambia

Figure 1. CO₂ emissions by fuel

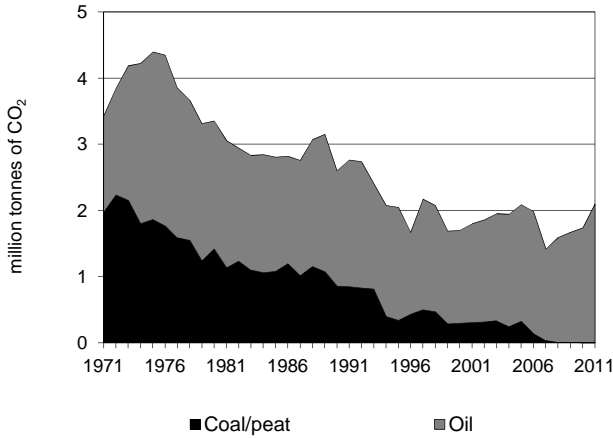


Figure 2. CO₂ emissions by sector

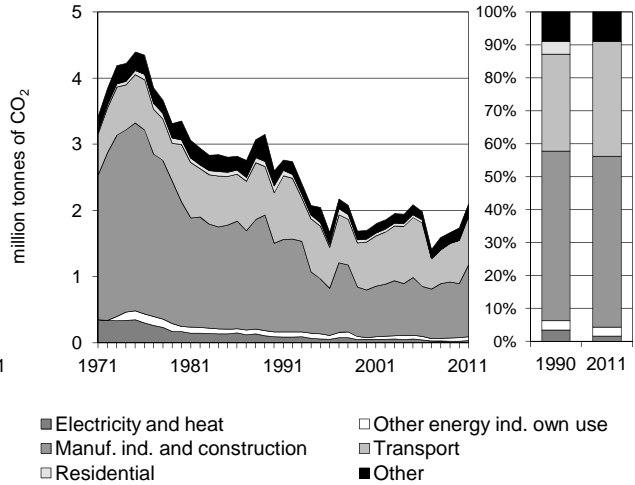


Figure 3. Reference vs Sectoral Approach

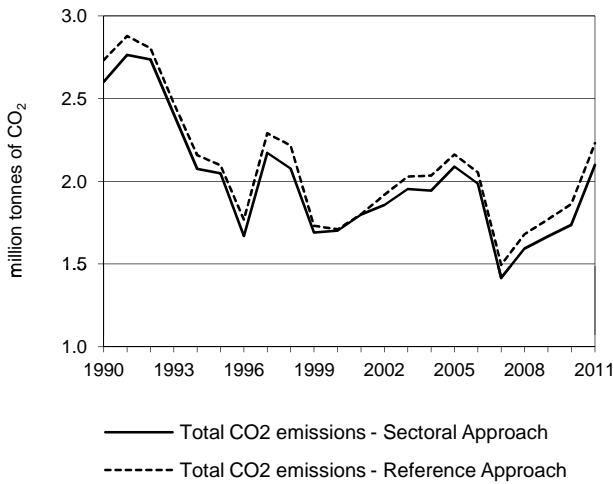


Figure 4. Electricity generation by fuel

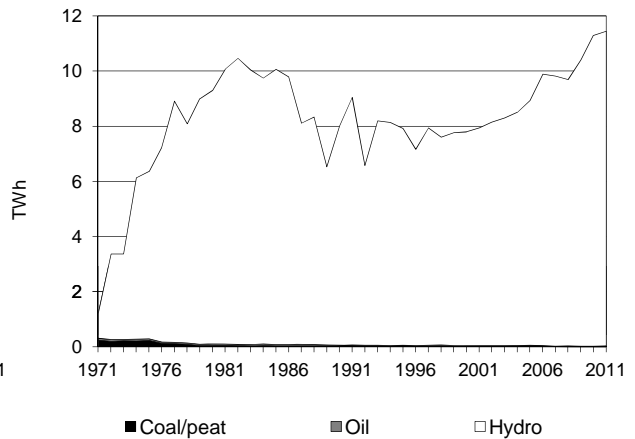


Figure 5. Changes in selected indicators *

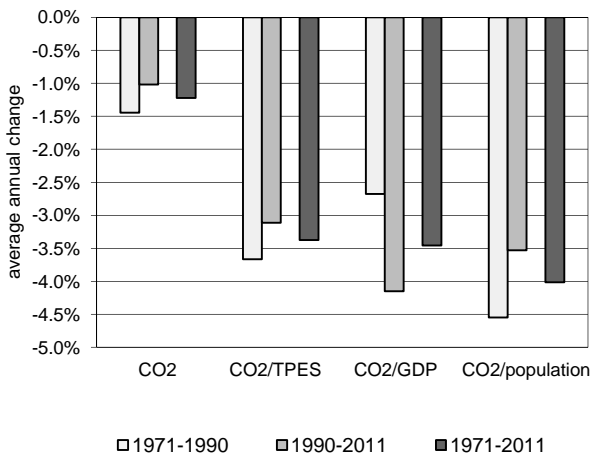
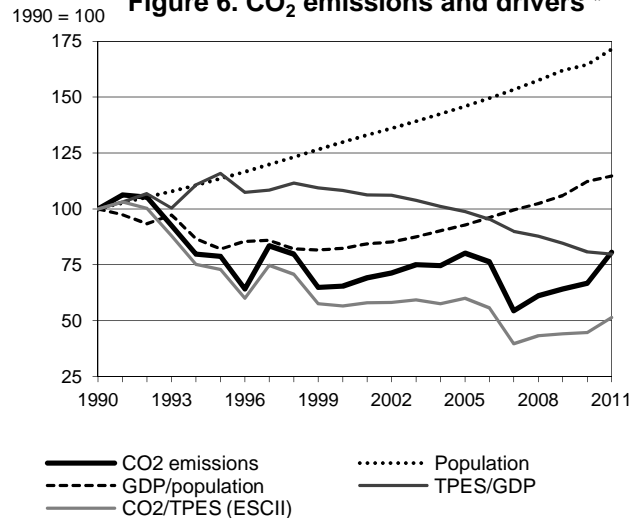


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Zambia

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	2.60	2.05	1.70	2.09	1.67	1.74	2.10	-19.3%
TPES (PJ)	226	244	261	302	328	337	354	56.7%
GDP (billion 2005 USD)	5.31	4.95	5.68	7.18	9.11	9.80	10.43	96.5%
GDP PPP (billion 2005 USD)	9.81	9.14	10.49	13.27	16.83	18.11	19.28	96.5%
Population (millions)	7.86	8.92	10.20	11.46	12.72	12.93	13.48	71.4%
CO ₂ / TPES (tCO ₂ per TJ)	11.5	8.4	6.5	6.9	5.1	5.1	5.9	-48.5%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	0.49	0.41	0.30	0.29	0.18	0.18	0.20	-59.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	0.27	0.22	0.16	0.16	0.10	0.10	0.11	-59.0%
CO ₂ / population (tCO ₂ per capita)	0.33	0.23	0.17	0.18	0.13	0.13	0.16	-53.0%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	79	65	80	64	67	81	-19.3%
Population	100	113	130	146	162	164	171	71.4%
GDP per population (GDP per capita)	100	82	82	93	106	112	115	14.6%
Energy intensity (TPES/GDP)	100	116	108	99	85	81	80	-20.2%
Carbon intensity: ESCII (CO ₂ /TPES)	100	73	57	60	44	45	51	-48.5%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	-	2.10	-	-	2.10	-19.3%
Main activity producer elec. and heat	-	0.03	-	-	0.03	57.1%
Unallocated autoproducers
Other energy industry own use	-	0.06	-	-	0.06	-21.2%
Manufacturing industries and construction	-	1.09	-	-	1.09	-18.8%
Transport	-	0.73	-	-	0.73	-4.5%
<i>of which: road</i>	-	0.49	-	-	0.49	-28.4%
Other	-	0.19	-	-	0.19	-43.5%
<i>of which: residential</i>	-	-	-	-	-	-100.0%
Reference Approach	-	2.23	-	-	2.23	-18.4%
Diff. due to losses and/or transformation	-	0.13	-	-	0.13	
Statistical differences	-	0.00	-	-	0.00	
<i>Memo: international marine bunkers</i>	-	-	-	-	-	-
<i>Memo: international aviation bunkers</i>	-	0.10	-	-	0.10	-49.2%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Manufacturing industries - oil	1.09	73.6%	6.2	6.2
Road - oil	0.49	-28.4%	2.8	9.0
Other transport - oil	0.24	195.9%	1.4	10.3
Non-specified other - oil	0.19	24.3%	1.1	11.4
Other energy industry own use - oil	0.06	-21.2%	0.3	11.7
Main activity prod. elec. and heat - oil	0.03	57.1%	0.2	11.9
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
<i>Memo: total CO₂ from fuel combustion</i>	<i>2.10</i>	<i>-19.3%</i>	<i>11.9</i>	<i>11.9</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

Zimbabwe

Figure 1. CO₂ emissions by fuel

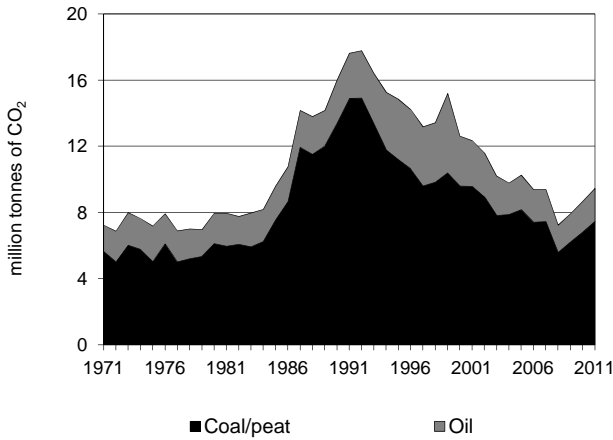


Figure 2. CO₂ emissions by sector

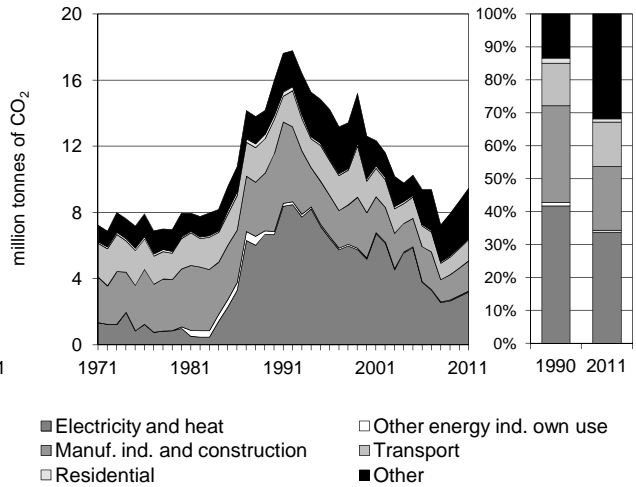


Figure 3. Reference vs Sectoral Approach

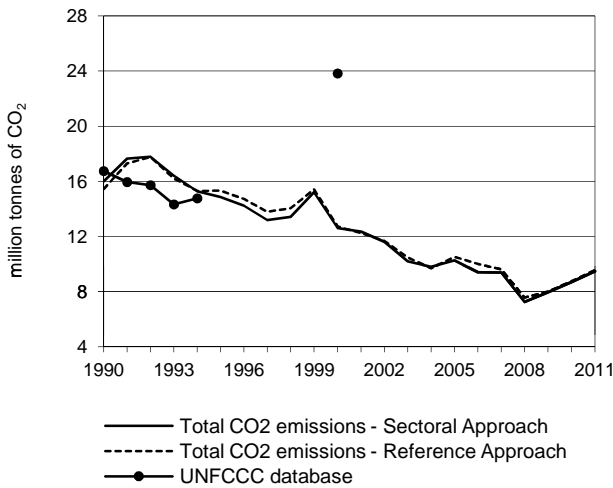


Figure 4. Electricity generation by fuel

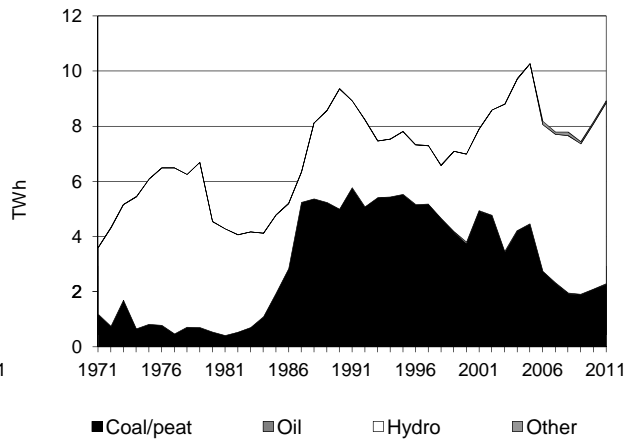


Figure 5. Changes in selected indicators *

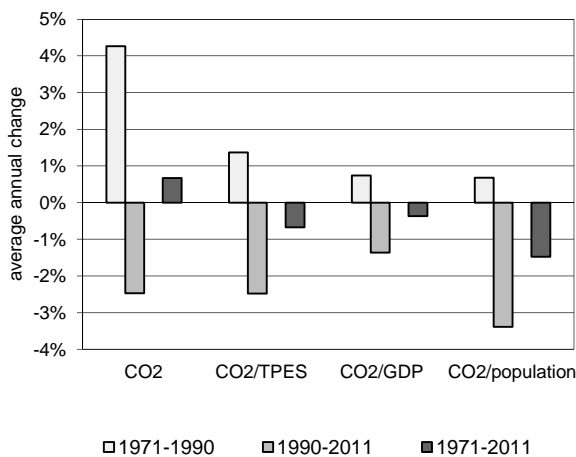
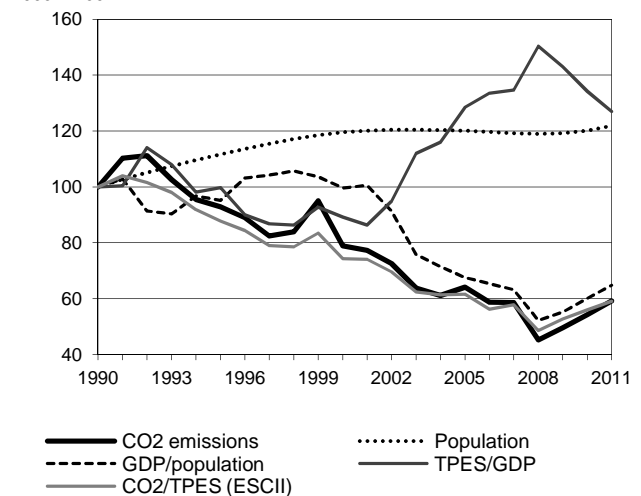


Figure 6. CO₂ emissions and drivers *



* Based on GDP in 2005 USD, using purchasing power parities.

Zimbabwe

Key indicators

	1990	1995	2000	2005	2009	2010	2011	% change 90-11
CO ₂ Sectoral Approach (MtCO ₂)	16.00	14.85	12.61	10.26	7.93	8.67	9.46	-40.9%
TPES (PJ)	389	412	413	405	366	377	390	0.2%
GDP (billion 2005 USD)	7.10	7.54	8.45	5.76	4.67	5.12	5.60	-21.1%
GDP PPP (billion 2005 USD)	4.80	5.10	5.71	3.89	3.16	3.46	3.79	-21.1%
Population (millions)	10.47	11.69	12.51	12.57	12.47	12.57	12.75	21.8%
CO ₂ / TPES (tCO ₂ per TJ)	41.1	36.0	30.5	25.3	21.7	23.0	24.3	-41.0%
CO ₂ / GDP (kgCO ₂ per 2005 USD)	2.25	1.97	1.49	1.78	1.70	1.69	1.69	-25.0%
CO ₂ / GDP PPP (kgCO ₂ per 2005 USD)	3.33	2.91	2.21	2.64	2.51	2.50	2.50	-25.1%
CO ₂ / population (tCO ₂ per capita)	1.53	1.27	1.01	0.82	0.64	0.69	0.74	-51.5%
CO₂ emissions and drivers - Kaya decomposition (1990=100) *								
CO ₂ emissions	100	93	79	64	50	54	59	-40.9%
Population	100	112	119	120	119	120	122	21.8%
GDP per population (GDP per capita)	100	95	100	68	55	60	65	-35.2%
Energy intensity (TPES/GDP)	100	100	89	128	143	134	127	26.9%
Carbon intensity: ESCII (CO ₂ /TPES)	100	88	74	62	53	56	59	-41.0%

* Please see Part I, Chapter 1 for methodological notes. Based on GDP in 2005 USD, using purchasing power parities.

2011 CO₂ emissions by sector

<i>million tonnes of CO₂</i>	Coal/peat	Oil	Natural gas	Other **	Total	% change 90-11
Sectoral Approach	7.45	2.01	-	-	9.46	-40.9%
Main activity producer elec. and heat	3.07	0.06	-	-	3.13	-53.1%
Unallocated autoproducers	0.06	-	-	-	0.06	x
Other energy industry own use	0.06	-	-	-	0.06	-61.9%
Manufacturing industries and construction	1.57	0.25	-	-	1.82	-61.2%
Transport	0.05	1.23	-	-	1.28	-38.2%
<i>of which: road</i>	-	1.16	-	-	1.16	-11.9%
Other	2.63	0.48	-	-	3.10	30.0%
<i>of which: residential</i>	0.01	0.08	-	-	0.09	-63.4%
Reference Approach	7.52	2.01	-	-	9.53	-38.3%
Diff. due to losses and/or transformation	0.14	-	-	-	0.14	
Statistical differences	-0.07	0.00	-	-	-0.07	
<i>Memo: international marine bunkers</i>	-	..	-	-	..	..
<i>Memo: international aviation bunkers</i>	-	0.03	-	-	0.03	-88.9%

** Other includes industrial waste and non-renewable municipal waste.

Key sources for CO₂ emissions from fuel combustion in 2011

IPCC source category	CO ₂ emissions (MtCO ₂)	% change 90-11	Level assessment (%) ***	Cumulative total (%)
Main activity prod. elec. and heat - coal/peat	3.07	-54.0%	13.6	13.6
Non-specified other sectors - coal/peat	2.62	67.3%	11.6	25.2
Manufacturing industries - coal/peat	1.57	-63.6%	7.0	32.1
Road - oil	1.16	-11.9%	5.1	37.3
Non-specified other - oil	0.39	-31.9%	1.7	39.0
Manufacturing industries - oil	0.25	-33.1%	1.1	40.1
Residential - oil	0.08	-29.0%	0.4	40.5
Other transport - oil	0.07	-72.0%	0.3	40.8
Other energy industry - coal/peat	0.06	-61.9%	0.3	41.0
<i>Memo: total CO₂ from fuel combustion</i>	<i>9.46</i>	<i>-40.9%</i>	<i>41.8</i>	<i>41.8</i>

*** Percent calculated using the total GHG estimate excluding CO₂ emissions/removals from land use change and forestry.

PART III:

GREENHOUSE-GAS EMISSIONS

1. SHARES AND TRENDS IN GHG EMISSIONS

The information in Part III (with the exception of CO₂ emissions from fuel combustion) has been provided by Jos G.J. Olivier from the PBL Netherlands Environmental Assessment Agency and Greet Janssens-Maenhout leading the EDGAR team of the Joint Research Centre (JRC) of the European Commission, using the EDGAR 4.2 FT2010 database developed jointly by JRC and PBL.

Country data have been provided for 1990, 2000, 2005 and 2010. Moving from the EDGAR 4.2 to the EDGAR 4.2 FT2010 database has resulted in a few revisions to greenhouse-gas (GHG) estimates for some source categories for years before 2010. Compared to last year, a few small corrections have been made in 2010 F-gas emissions for a few sources. Please see Chapter 2 for further details on data sources and methodology.

Emission trends for gases and sources are provided in this discussion through 2010.

CO₂ emissions from fuel combustion constitute the majority of anthropogenic GHG emissions. However, comprehensive analysis of emissions and emission trends considers other sources of CO₂ as well as other gases.

To complement work regarding the emissions of CO₂ from fuel combustion, the IEA elected to include the EDGAR data on other CO₂ sources and on five other greenhouse gases; CH₄, N₂O and the fluorinated gases (or “F-gases”) HFCs, PFCs and SF₆. These gases are addressed by the Kyoto Protocol.

When considering comparative shares and trends in GHG emissions, data on gases and sources other than CO₂ from fuel combustion are much more uncertain. Country-specific estimates of CO₂ from biomass burning and F-gas emissions are particularly difficult to ascertain.

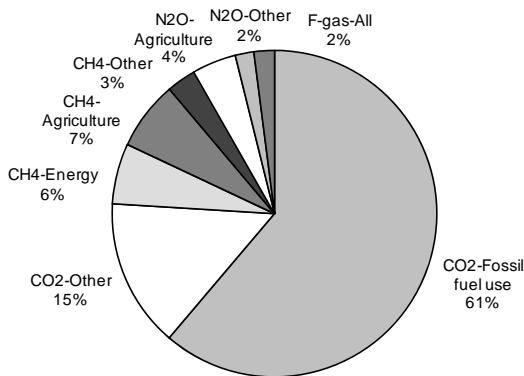
Shares by gas

The contribution of non-CO₂ gases to total emissions can be estimated by expressing the emissions of all the gases in CO₂-equivalent units. For a given gas, emissions expressed in mass are multiplied by its specific weighting factor, the Global Warming Potential (GWP). The GWP is an estimate of the relative contribution of a kilogramme of that gas to global radiative forcing, as compared to the same amount of CO₂, integrated over a fixed period of time (*e.g.* 100 years).

The UN Framework Convention on Climate Change (UNFCCC), following the Second Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), uses the 100-year GWPs of 21 for CH₄, 310 for N₂O and 23 900 for SF₆. For the most common HFCs, GWPs vary between 140 and 3 000 (1 300 for HFC-134a). For the by-product HFC-23, the GWP is 11 700. The GWPs for PFCs vary between 6 500 (CF₄) to 9 200 (C₂F₆). These two PFCs, the ones most commonly used, are also significant sources of by-product emissions. This chapter expresses all emission data in CO₂-equivalents using these GWP values.

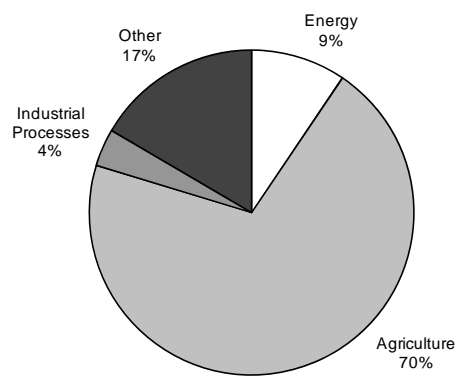
In 2010, CO₂ contributed 76% of global GHG emissions, CH₄ about 16%, N₂O about 6% and the combined F-gases about 2% (Figure 1). The largest sources of GHG emissions were the energy sector (68%, mainly CO₂ fossil fuel use), and agriculture (11%, mainly CH₄ and N₂O). Other sources of greenhouse gases were CO₂ from biomass burning (10%, mostly forest and peat fires and post-burn decay in non-Annex I countries), and CO₂ from cement production (3%, of which 54% originated in China). Please note that emissions from forest and peat fires are highly variable over the years.

Figure 1. Global GHG emissions by gas/source in 2010



For **nitrous oxide** (N₂O), agriculture contributed 70% of emissions in 2010, mainly from synthetic fertilisers and animal waste dropped on soils (either as animal manure or by animals during grazing) and agricultural waste burning (Figure 3). A much smaller source is fuel combustion (9%, mainly from coal, fuelwood and road transport). Another small source is N₂O from industrial processes (4%), mostly in Annex I countries.

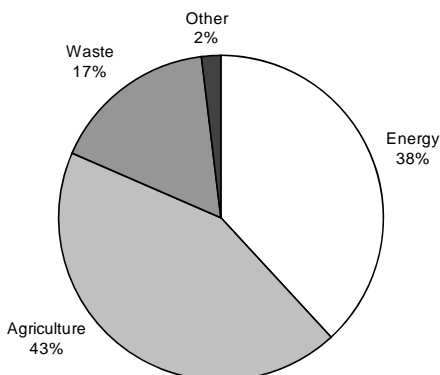
Figure 3. Global N₂O emissions in 2010



As seen in Figure 2, on an individual gas basis, the major global sources for **methane** (CH₄) in 2010 were:

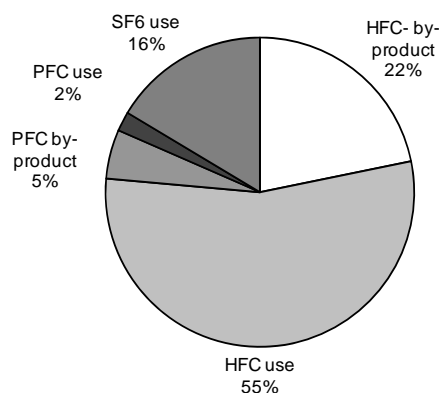
- agriculture (43%), mainly from enteric fermentation by animals and animal waste, from rice cultivation and from savannah burning;
- energy production and transmission (38%), mainly from coal production, and gas production and transmission;
- waste (17%), from landfills and wastewater.

Figure 2. Global CH₄ emissions in 2010



For the **fluorinated gases** (Figure 4), emissions are split between “use” and “by-products” because of the different ways they are produced. HFC use represented 55% of the total in 2010, of which HFC 134a alone represented 42%. Total by-product emissions of HFC contributed 22% and by-product emissions of PFCs another 5%. SF₆ use represented 16%, while PFC use represented the remaining 2%. Most F-gas emissions are emitted by Annex I countries.

Figure 4. Global F-gas emissions in 2010



Shares by region

In 2010, most **methane** emissions originated in non-Annex I regions such as Asia (42%) including China (21%) and Latin America¹ (12%). Emissions from Annex I countries contributed 26% of total emissions, with the largest contribution coming from the Annex I members of the Former Soviet Union (8%) and North America (8%).

For methane, emissions from animals and their waste dominate sources in Latin America and South Asia, while emissions from rice cultivation are common in South, East and Southeast Asia. Coal production emissions are concentrated in East Asia (mainly China), North America, and Other Europe and Eurasia, while emissions from gas systems are concentrated in the Former Soviet Union countries and North America. Methane from landfills stems mainly from Annex I countries, whereas methane emissions from wastewater disposal originate predominantly in non-Annex I countries.

Non-Annex I regions produced three-quarters of global **nitrous oxide** emissions in 2010: Asia (36%) including China (18%), Africa (19%) and Latin America (14%). N₂O emissions from Annex I countries contributed 27% to the global total, with most emissions originating in North America (11%) and OECD Europe (9%).

Of all nitrous oxide sources, animal waste emissions occur predominantly in the non-Annex I regions of Latin America, Africa and South Asia; N₂O from fertiliser use is largest in East Asia (mainly China) and Latin America followed by North America, Annex II Europe and South Asia (mainly India). N₂O emissions from crop production are largest in North America, Latin America, South Asia and East Asia. Industrial processes also emit significant volumes of N₂O.

The shares of Annex I countries in total CH₄ and total N₂O emissions (26% and 27% respectively) were relatively low compared to their share in global CO₂ emissions (38%).

In 2010, most **fluorinated gas** emissions originated in Annex I countries (66%), with North America contributing 38%, OECD Europe 13%, OECD Asia Oceania 9% and Other Europe and Eurasia 7%. Non-Annex I countries contributed about 34% to global F-gas emissions.

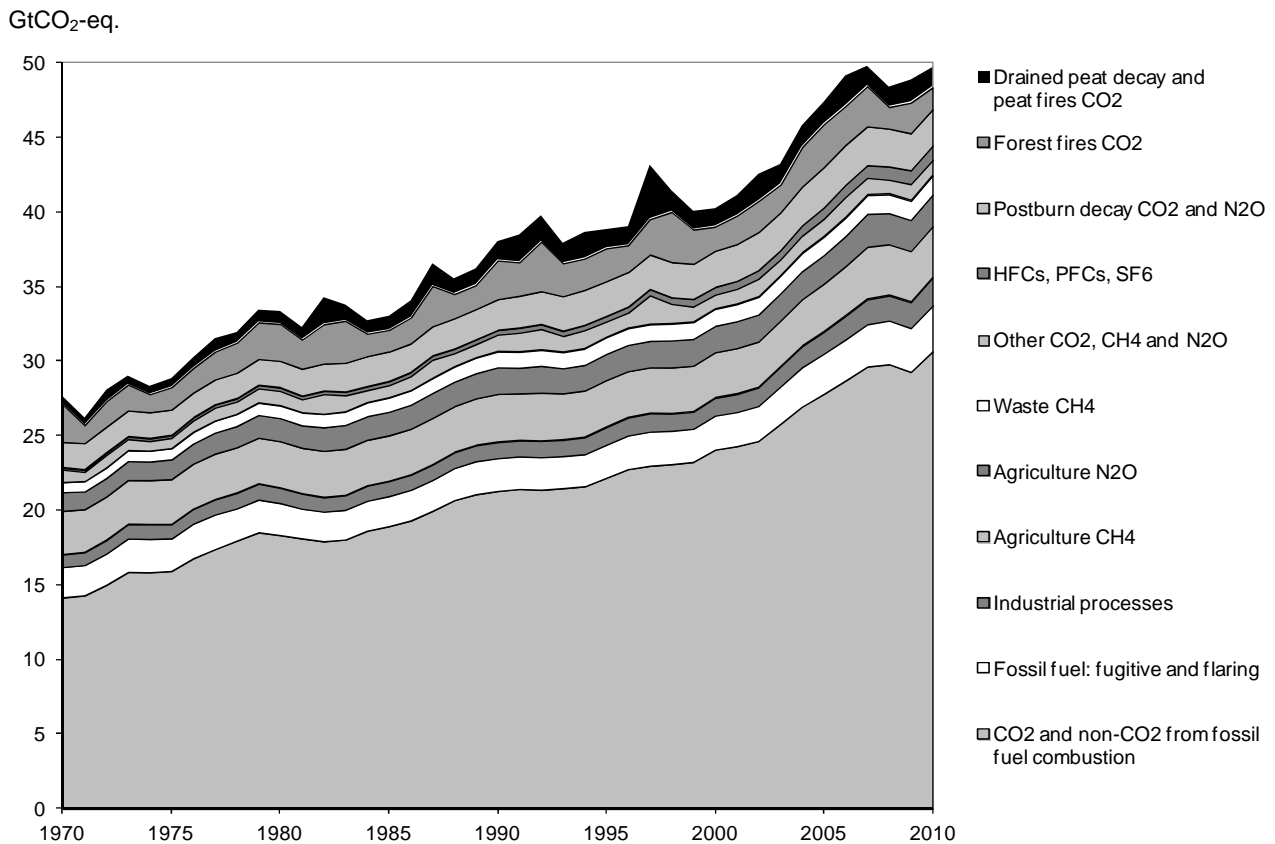
Total GHG emission trends

Emissions related to fossil fuels dominate the global trend in total GHG emissions. Between 1970 and 2010, total global anthropogenic GHG emissions increased considerably, with increases of CO₂ (including large-scale biomass burning of forests and biomass decay) by about 107% and increases of CH₄ and N₂O by about 47% and 43%, respectively, and the F-gases by about 700%. Total emissions of all greenhouse gases - weighted by their GWP - increased by about 80% since 1970.

According to the EDGAR 4.2 FT 2010 dataset, global total GHG emissions increased by 31% during the period 1990-2010 (Figure 5). A 44% growth in CO₂ emissions from fuel combustion drove much of this increase. Over the same period, although highly variable over time, CO₂ emissions from biomass burning and post-burn decay – based on satellite observations – are assumed to have decreased by about 10% with CO₂ from decay of drained peatland increasing by 18% since 1990. Increases in CO₂ emissions from cement production (120%), CH₄ emissions from fossil fuel production (44%) and waste (21%), N₂O emissions from agriculture (20%) and the F-gases (about 225%, mainly from HFC use) also contributed to the total increase. The F-gases (for which 1995 generally serves as base year) increased their share of global emissions from 1.0% in 1990 to 2.0% in 2010.

1. For the purposes of this discussion, Latin America refers to non-OECD Americas, Chile and Mexico. North America refers to Canada and the United States. Former Soviet Union contains both Annex I and non-Annex I countries.

Figure 5. Trend in global GHG emissions 1970-2010



Sources: IEA for CO₂ from fuel combustion and JRC/PBL (2012) [EDGAR 4.2 FT2010] for all other sources.

CO₂ emission trends

Energy dominates the trend in CO₂ emissions, accounting for 82% of the global total CO₂ emissions in 2010 including non-energy uses. About 10 percentage points higher than in 1970, this share now varies between 90-99% in most Annex I countries. Within non-Annex I countries, the energy share in CO₂ emissions varies more widely. Indeed, in some African, Latin American and Asian countries, it can be lower than 10%.

Over the 1990-2010 period, total fossil fuel combustion emissions of CO₂ increased about 45% worldwide (by about 146% in non-Annex I countries while decreasing 3% in Annex I countries). Emissions from electricity and heat production and from road transport dominated global trends. Between 1990 and 2010, CO₂ emissions from electricity and heat production increased by 18% for Annex II countries and by 109% in the rest of the world. Over the same period,

road transport emissions rose 23% in Annex II countries and 115% in the other countries. By 2010, these two sectors together accounted for 58% of global total CO₂ emissions from fuel combustion. The introduction at the beginning of this publication provides a more complete discussion of CO₂ emissions in 2010 and the trends in energy-related CO₂ emissions.

In 2010, the highly variable emissions from deforestation (*i.e.* forest fires) plus from decay of drained peatland accounted for about 7% of global CO₂ emissions (or about 13% including indirect CO₂ emissions from post-burn decay of remaining aboveground biomass). According to satellite observations the share of deforestation in global emissions was about 18% in the 1970s, 1980s and 1990s. Since 2000, however, this share has decreased due to rapidly increasing emissions from fossil fuel combustion. In 2010, CO₂ emissions from cement clinker production – excluding fossil fuel use – represented almost 4% of total emissions worldwide. Between 1990 and 2010, CO₂ from cement production increased by more than 150%.

CH₄ emission trends

Between 1970 and 2010, global methane emissions increased by almost half. In the 1970s emissions increased with an average growth rate of 1.3% per year. In the 1980s, this growth rate slowed down to an average 1.1% per year, determined mainly by growth of emissions in Other Europe and Eurasia from gas production and transmission and in East Asia from coal production (Figure 6). In addition, enteric fermentation by ruminants and waste and wastewater disposal contributed to the increased emissions, particularly in non-Annex I regions. Emissions from rice cultivation are estimated to have decreased due to changes in types of rice grown and to other organic amendment practices. Furthermore, coal production shifted to incorporate more surface mining, which releases much less methane than underground mines.

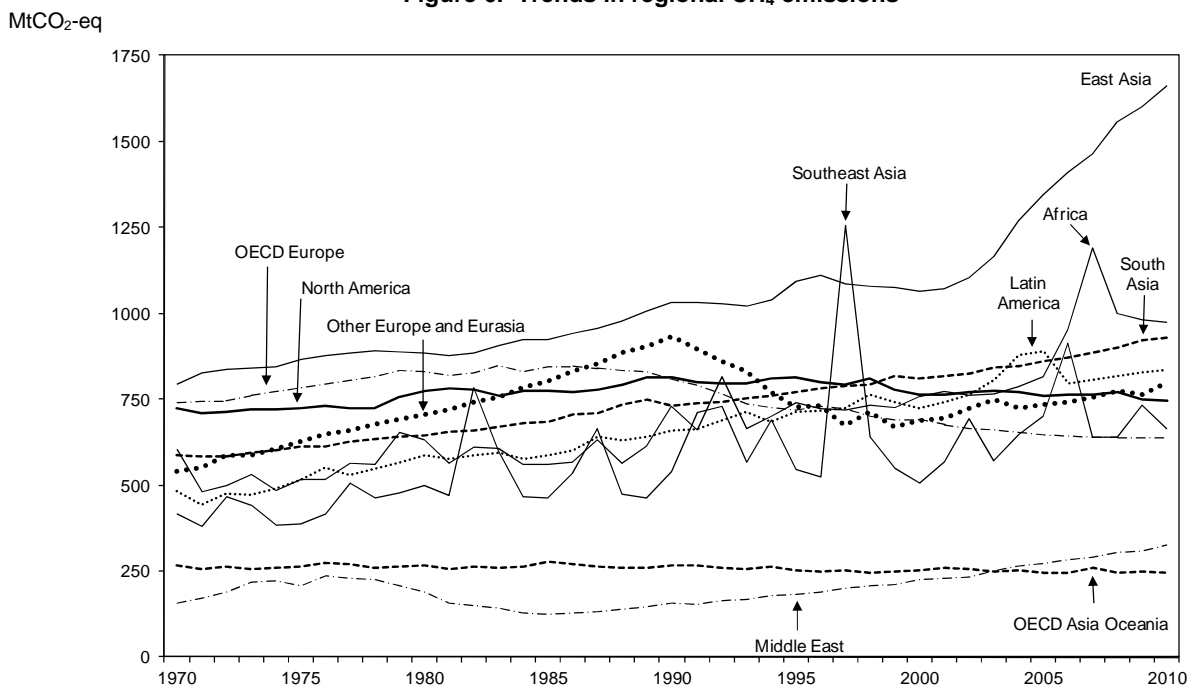
In the 1990s, an average decrease of 0.2% per year was observed. The economic decline of FSU countries in the early 1990s strongly influenced this global methane trend. Their emissions from coal production, from gas transmission and from animals (enteric fermentation) decreased substantially between 1990 and 1995. It should be stressed, however, that detailed statistics for this region are uncertain over this period. Despite the overall decline in the 1990s, increases were observed regionally: from gas production (particularly in the Middle East and North America), from waste handling (landfills in Latin America and

wastewater in South Asia), from large-scale biomass burning in developing countries and from coal production in China. These increases were partially offset by decreases in fugitive emissions from coal production and CH₄ emissions from animals in EIT countries.

Since 2000, emissions started increasing again, with an average growth rate of 1.9% per year, which has meant that since 2002, the emissions increased faster than in the last four decades. This led to a global increase of about 20% over the period 2000-2010, driven by increased coal mining by the top methane-emitting country China (+50%) and increased cattle numbers in Brazil (+23%).

Between 1990 and 2010, country-specific trends of activity data and emission factors lead to an increase of global total methane emissions of about 17%. During this period, emissions in non-Annex I countries increased about 38%, with the largest absolute growth occurring in Asia and Africa. Emissions in Annex I countries decreased by 18%, mainly driven by the countries of the Former Soviet Union. Annex II emissions as a whole decreased over the same period by 16% and OECD Europe decreased by about 21%, mainly as a result of the policies of the United Kingdom and Germany, which reduced coal production and increased methane recovery from coal mines, entailing emission reductions of about 50%. In North America and OECD Europe, methane emissions from landfills also decreased by about 50% due to enhanced waste separation and methane recovery.

Figure 6. Trends in regional CH₄ emissions



Source: EDGAR 4.2 FT2010 (JRC/PBL, 2012).

N₂O emission trends

Between 1970 and 2010, global emissions of N₂O increased by about 43%. Increased use since the 1970s of synthetic fertilisers and manure from live-stock caused agricultural emissions in South Asia and East Asia to increase on average by 3-4% annually. These regional emission trends continued into the 2000s (Figure 7). Emissions from Latin America and Africa also increased in the 1990s, predominantly from the same sources and from forest fires.

In contrast, N₂O emissions from industrial processes decreased by 40% during the 1980s. This decrease resulted from the gradual upgrade of global production facilities for nitric acid. By 1990 about 20% of the facilities were equipped for non-selective catalytic reduction limiting NO_x emissions while simultaneously reducing N₂O emissions.

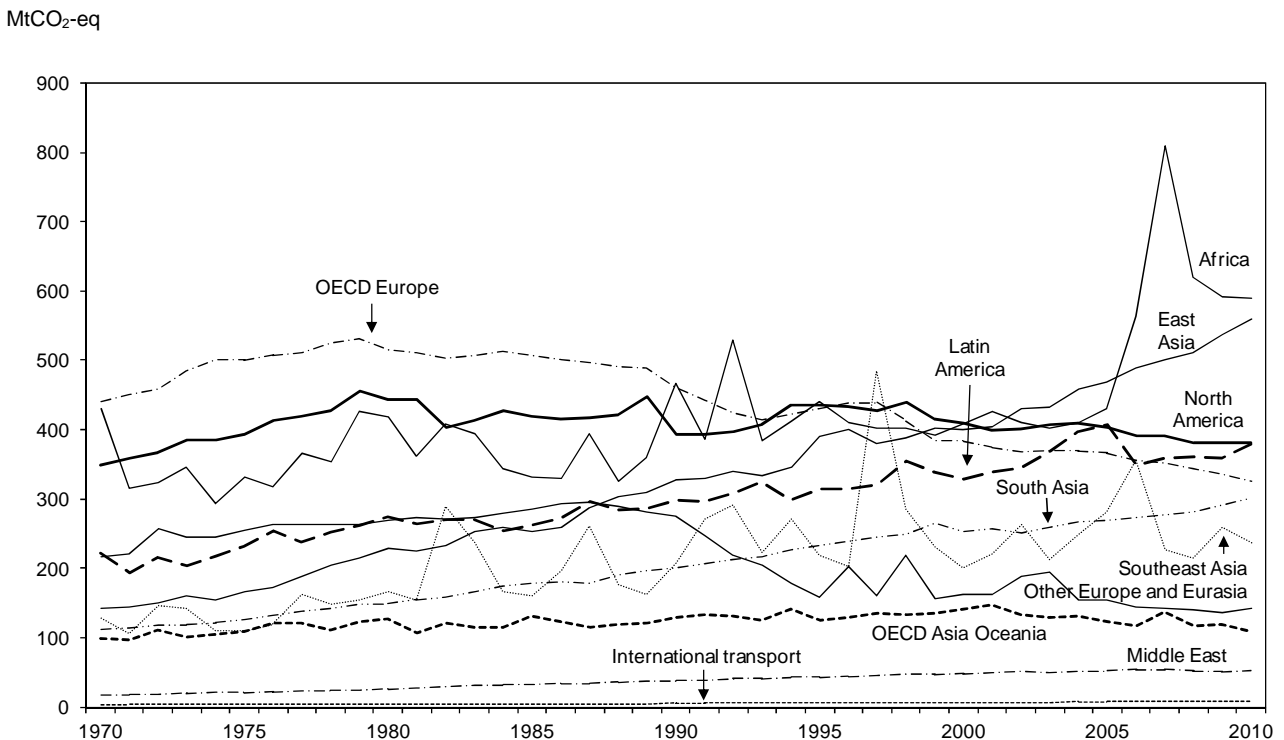
During the 1970s, North America and Japan introduced catalytic converters in gasoline-fired cars to reduce emissions of precursors of tropospheric ozone, but with higher N₂O emissions as a side effect. Since

the 1990s this technology was also introduced in Europe and Australia. Until about 2000 the catalytic converters contributed to the increase in N₂O emissions in these countries, though in the late 1990s newer types were introduced with lower specific N₂O emissions.

In the period 1990-2010, global N₂O emissions are estimated to have increased by about 10%. The three-quarter reduction in industrial emissions from adipic acid manufacturing particularly limited this increase. Over this period, emissions in non-Annex I countries increased by over 35%, mainly in the agricultural sector in South Asia, East Asia and Latin America. The increase was partially offset by decreasing emissions in the non-Annex I members of the Former Soviet Union countries (-24%) and, to a lesser extent, in other EIT countries. In OECD Europe, N₂O decreased by almost 29% since 1990, mainly due to emission abatement in the chemical industry and to a decrease in the use of nitrogen fertilisers.

When considering these trends, the reader should bear in mind that the uncertainties in annual emissions of most sources of N₂O are very large, *e.g.* the uncertainty for agricultural sources may sometimes exceed 100%.

Figure 7. Trends in regional N₂O emissions



Source: EDGAR 4.2 FT2010 (JRC/PBL, 2012).

HFC, PFC and SF₆ emission trends

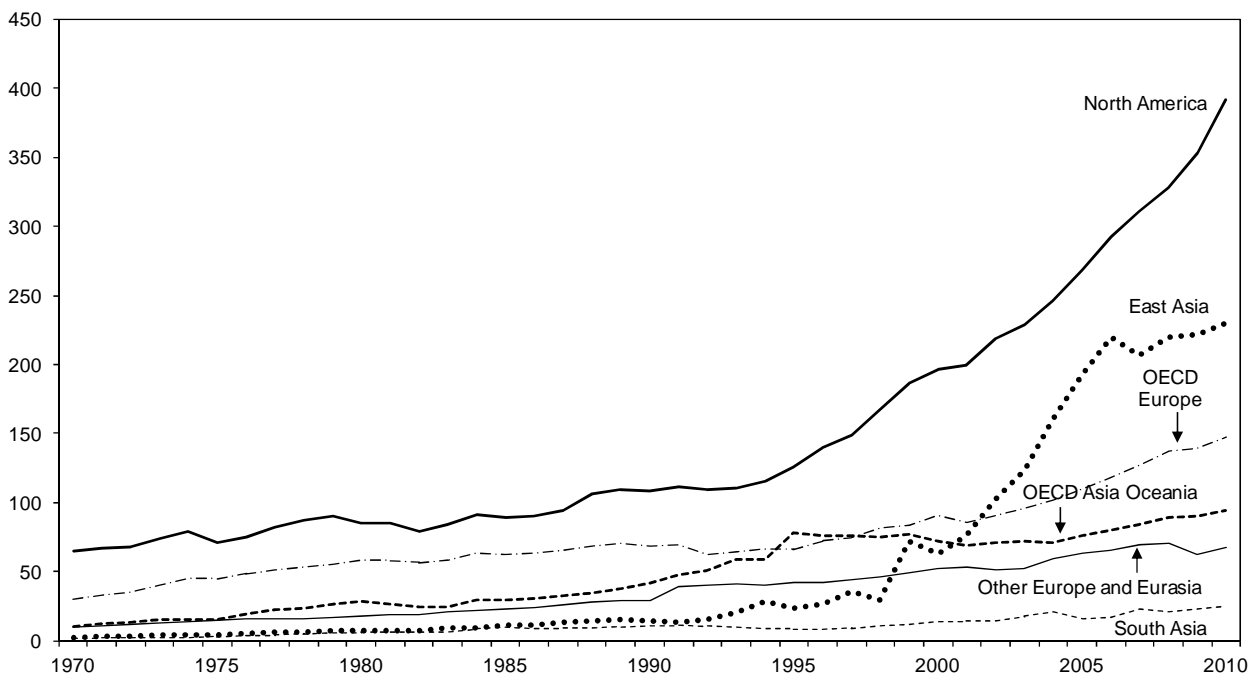
Between 1990 and 2010, the estimated emissions of F-gases increased by about 225%, mainly due to an increase in HFC emissions: emissions of HFC in 2010 were about 9 times higher than in 1990. During the same period, PFCs emissions decreased by about 35% while SF₆ emissions increased by about 45%. Annex I regions experienced large growth in F-gas emissions, with regional increases on the order of 125% except for North America which showed an increase of over 250%. On a regional basis, total F-gas emission trends varied between 10% and 1500% for the non-Annex I regions, with the largest absolute increases coming from East Asia, driven by a fifteen-fold increase in China, which is here included in East Asia.

Since 1995, global F-gas emissions have increased more rapidly. The increase in HFC emissions (4.5 times higher) more than offset a 30% reduction in PFCs emissions. The small reductions in global SF₆ emissions observed in the period 1996-2004 were mainly due to reductions in emissions from manufacture and use of switchgear for the electricity sector. The large reduction in PFC emissions in the last years is due to the phasing-out of old Söderberg technology for aluminium production in China. Global emissions of HFCs other than HFC-134a now exceed emissions of HFC-134a, widely used for refrigeration and air-conditioning.

When considering these trends, one should note that the uncertainties in annual emissions of most sources of F-gases are very large, *e.g.* at a country level they may well exceed 100%. Therefore, the figures provided for individual countries should be considered solely as order-of-magnitude estimates.

Figure 8. Trends in regional* F-gas emissions

MtCO₂-eq



* Only regions with significant emissions of F-gases have been included in this figure.

Source: EDGAR 4.2 FT2010 (JRC/PBL, 2012).

2. SOURCES AND METHODS

When looking at GHG emission trends, limiting the emissions to CO₂ from fuel combustion means that the estimates give an incomplete picture of total GHG emissions. Therefore, to put the CO₂ emissions from fuel combustion into context, information has been added from the emissions model “EDGAR”, developed by the Netherlands Environmental Assessment Agency (PBL) and the European Commission’s Joint Research Centre (JRC) to provide global anthropogenic emissions of greenhouse gases to be used as a reference database for science and policy applications.

The information in Part III (with the exception of CO₂ emissions from fossil fuel combustion) has been provided by Jos G.J. Olivier from PBL and Greet Janssens-Maenhout based on the EDGAR 4.2 FT2010 dataset. PBL and JRC are responsible for the calculation of the EDGAR 4.2 FT2010 data. Please see below for further details.

Background on PBL and JRC

The **PBL Netherlands Environmental Assessment Agency** is a government-funded agency that supports national and international policy makers by exploring future spatial and social trends that influence environmental, ecological and spatial quality, and by evaluating possible policy options. PBL explores the future quality of the environment and identifies possible strategic options. It aims to contribute to improving the quality of political and administrative decision-making at a regional, national, European and global scale by conducting outlook studies, analyses and evaluations in which an integrated approach and policy relevance are considered paramount.

PBL provides independent integrated assessments on topics such as sustainable development, energy and climate change, biodiversity, spatial planning, transport,

land use and air quality. PBL acts as an interface between science and policy and provides the Netherlands government and international organisations such as EU/EEA, IEA/OECD, UN and the World Bank with sound, evidence-based assessments. PBL employs about 200 staff members and works in close collaboration with national and international partners, to assess future policies and the effects of policies already in place. A key feature of PBL research is taking a broad view of the subject matter and revealing the links between different spatial scales of investigation. This ranges from Dutch problems in the European and global context to global topics such as climate change, as well as European and global sustainability issues. PBL participates in the Topic Centre on Air and Climate Change of the European Environmental Agency (EEA), whose aim is to support EU policy on air pollution and climate change, together with 12 other organisations in Europe. PBL was also involved in the work of the IPCC’s National Greenhouse Gas Inventory Programme (NGGIP).

The **Joint Research Centre (JRC)** is a Directorate General of the European Commission (EC). The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. A service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. Close to the policy-making process, it serves the common interest of the Member States, while being independent of special interests, whether national or private. The Institute for Environment and Sustainability (IES) is one of seven institutes of the JRC, located in Ispra (Italy). The mission of IES is to provide scientific-technical support to the European Union’s policies for the protection and sustainable development of the European and global environment. The IES adopts a systems-based approach to understand the complex interactions between

human activity and the physical environment, and manage strategic resources (water, land, forests, food, minerals, etc.) in a more sustainable manner. Together with other JRC institutes, the IES provides the scientific basis for the conception, development, implementation and evaluation of EU policies that promote the greening of Europe and the global sustainable management of natural resources. The IES has over 400 staff members and manages several large-scale research infrastructures and hosts a large number of unique pan-European and global databases. The main customers of the IES are the Policy Directorates-General of the European Commission, other European bodies such as the European Environment Agency (EEA) and the European Space Agency (ESA), and global organisations such as the United Nations Environment Programme (UNEP) and the United Nations Food and Agricultural Organisation (FAO). The IES cooperates with international organisations such as UN-ECE, WHO, IPCC and NASA.

General note on EDGAR

Version 4 of the *Emission Database for Global Atmospheric Research*, in short the *EDGAR 4 system*, has been developed jointly by the European Commission's Joint Research Centre (JRC) and the PBL Netherlands Environmental Assessment Agency. The aim of the EDGAR system, which was started in 1992 with financial support from the Netherlands' former Ministry of Housing, Spatial Planning and the Environment (VROM) and the Netherlands' National Research Programme on Global Air Pollution and Climate Change (NRP), is to provide global anthropogenic emissions of greenhouse gases CO₂, CH₄, N₂O, HFCs, PFCs and SF₆ and of precursor gases and air pollutants CO, NO_x, NMVOC, SO₂ and the aerosols BC/OC, per source category, both at country/region levels as well as on a 0.1x0.1 degree grid. It is meant to serve as a reference database for policy applications, e.g. to provide JRC's POLES global economic energy scenario model and PBL's integrated global change model IMAGE 2 with emissions data and for assessments of potentials for emission reductions, as well as for scientific studies by providing gridded emissions as input for atmospheric models. The latter function is part of the *Global Exchange and Interactions Activity* (GEIA), that combines efforts to produce gridded inventories for all compounds relevant for the modelling activities within the *Analysis, Integration and Modelling of the Earth System* (AIMES) project of the *International Geosphere-Biosphere Programme* (IGBP) and of

ACCENT, a Network of Excellence funded by the EC, 6th Framework Programme (FP6), Priority 1.1.6.3 Global Change and Ecosystems. EDGAR data have also been used in the Fourth Report of IPCC Working Group III (IPCC, 2007).

Activity data were mostly taken from international statistical sources and emission factors for greenhouse gases were selected mostly from the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (IPCC, 2006) to ensure a consistent approach across countries. JRC and PBL have made all reasonable efforts to ensure that the information was generated correctly, but it is the responsibility of the EDGAR consortium to modify activity data when required to arrive at complete time series and for selecting the emission factors. It is stressed that the uncertainty in the resulting dataset at national level may be substantial, especially for methane and nitrous oxide, and even more so for the F-gases. The uncertainty is caused by the limited accuracy of international activity data used and in particular of emission factors selected for calculating emissions on a country level (Olivier *et al.*, 1999, 2001; Olivier and Berdowski, 2001; Olivier, 2002; Olivier *et al.*, 2005). However, since the methods used are either IPCC methodologies or comparable to them (see below), global totals comply with budgets used in atmospheric studies, plus the data were based on international information sources, this dataset provides a sound basis for comparability.

The main aim of the EDGAR 4.2 Fast Track 2010 (FT 2010) dataset was to provide an extended time series by adding emissions for 2009 and 2010. For the GHG update, the impact of CDM projects in developing countries to reduce CH₄, N₂O and HFC-23 emissions was taken into account. This applies to sources such as coal mines and landfills (CH₄ recovery), nitric acid and adipic acid production (N₂O) and the production of HCFC-22 (HFC-23), which now start to influence significantly global emission trends. In addition, a few errors found in the dataset have been corrected.

Although this dataset has been constructed with great care, JRC and PBL do not accept any liability from use of the data provided in this report including any inaccuracies or omissions in the data provided. For details on uncertainty and caveats identified in the dataset, as well as more detailed source category estimates, we refer user to the EDGAR 4 website at edgar.jrc.ec.europa.eu. Note that preliminary estimates for other more recent years than 2010 will be made publicly available through this website. Preliminary global trends of GHG emissions will also be made

available at PBL (2013). For CO₂ emissions through to 2012 please refer to Olivier et al. (2013).

Source definitions

For carbon dioxide:

Fuel combustion refers to fossil fuel combustion and the unstored fraction of non-energy/feedstock use (IPCC Source/Sink Category 1A) estimated using the IPCC Sectoral Approach from the *Revised 1996 IPCC Guidelines* (see Part I).

Fugitive refers to flaring of associated gas in oil and gas production (in some cases including indirect CO₂ from methane venting) (IPCC Source/Sink Category 1B).

Industrial Processes refers to production of cement, lime, soda ash, carbides, ammonia, methanol, ethylene and other chemicals, metals and to the use of soda ash, limestone and dolomite, and non-energy use of lubricants and waxes (IPCC Source/Sink Category 2). However, from EDGAR 4.1, only emissions from production of cement, lime and soda ash and from the use of soda ash, limestone and dolomite are included here, since all others were estimated by the IEA and reported under 'Fuel combustion'.

Other refers to direct emissions from forest fires and peat fires plus emissions from decay (decomposition) of aboveground biomass that remains after logging and deforestation and emissions from peat fires and decay of drained peat soils (IPCC Source/Sink Category 5). CO₂ from solvent use (IPCC Source/Sink Category 3), application of agricultural lime (IPCC Source/Sink Category 4) and from fossil fuel fires, notably coal fires and the Kuwait oil fires (IPCC Source/Sink Category 7), is also included here.

For methane:

Energy comprises production, handling, transmission and combustion of fossil fuels and biofuels (IPCC Source/Sink Categories 1A and 1B).

Agriculture comprises animals, animal waste, rice production, agricultural waste burning (non-energy, on-site) and savannah burning (IPCC Source/Sink Category 4).

Waste comprises landfills, wastewater treatment, human wastewater disposal and waste incineration (non-energy) (IPCC Source/Sink Category 6).

Others includes industrial process emissions such as methanol production, forest and peat fires and other vegetation fires (IPCC Source/Sink Categories 2 and 5).

For nitrous oxide:

Energy comprises combustion of fossil fuels and biofuels (IPCC Source/Sink Categories 1A and 1B).

Agriculture comprises fertiliser use (synthetic and animal manure), animal waste management, agricultural waste burning (non-energy, on-site) and savannah burning (IPCC Source/Sink Category 4).

Industrial Processes comprises non-combustion emissions from manufacturing of adipic acid, nitric acid, caprolactam and glyoxal (IPCC Source/Sink Category 2).

Others includes N₂O usage, forest and peat fires (including post-burn emissions from remaining biomass) and other vegetation fires, human sewage discharge and waste incineration (non-energy) and indirect N₂O from atmospheric deposition of NO_x and NH₃ from non-agricultural sources (IPCC Source/Sink Categories 3, 5, 6 and 7).

For fluorinated gases:

HFC emissions comprise by-product emissions of HFC-23 from HCFC-22 manufacture and the use of HFCs (IPCC Source/Sink Categories 2E and 2F).

PFC emissions comprise by-product emissions of CF₄ and C₂F₆ from primary aluminium production and the use of PFCs, in particular for the manufacture of semiconductors, flat panel displays and photovoltaic cells (IPCC Source/Sink Categories 2C, 2E and 2F). *SF₆ emissions* stem from various sources of SF₆ use, of which the largest is the use and manufacture of Gas Insulated Switchgear (GIS) used in the electricity distribution networks (IPCC Source/Sink Categories 2C and 2F) and from SF₆ production (Category 2E).

Data sources and methodology for EDGAR 4.2 FT2010

For EDGAR 4.2 Fast Track 2010 (EDGAR 4.2 FT2010) the same methods and data were applied for 1970-2008 as for EDGAR 4.2 FT 2008 that was used in last year's edition, however, with some corrections (CO₂ from power generation in the United States in 2008). For greenhouse gases the default emission factors from the *2006 IPCC Guidelines* (IPCC, 2006) were used instead of those of the *Revised 1996 IPCC Guidelines* (IPCC, 1997), except for CH₄ and N₂O from road transport where technology-specific factors

were used from the EMEP-EEA emission inventory guidebook (EEA, 2009).

EDGAR 4.2 FT2010 provides an extended time series for all sources by adding emissions for 2009 and 2010. For the new Fast Track estimates for 2009 and 2010, for the main sources of each greenhouse gas as proxy of the emissions trend in these years, either the official national reported emissions trend from UNFCCC (2012) was used, or the trend in the latest activity data for 2008 to 2010, or statistics for an activity that was assumed to be a good proxy for that source. These statistics were sectoral CO₂ emissions (IEA, this publication), fossil-fuel production (IEA, 2012), gas flaring (NOAA/NCDC, 2012), production of steel, aluminium, cement, lime and ammonia (USGS, 2012; WSA, 2012), animal numbers, crop production and nitrogen fertiliser consumption (FAO, 2012), large-scale biomass burning (GFED 3; Van der Werf et al., 2010), photovoltaic solar cell production and flat panel display sales (IEA, 2011; and others).

For small-scale sources, such as industrial process sources of methane and nitrous oxide from caprolactam production, linear extrapolation of the past trend from 2005 to 2008 was assumed. These proxies – sometimes adjusted to incorporate significant trends in the emission factors – were applied to most sources, comprising more than 95% of the global total for gas. For important sources, where significant trends in the technology mix or in the application rate of emission control technology had occurred, trend estimates were included. In all other cases the mix and fraction of end-of-pipe abatement technology has been left unchanged after 2008.

To take into account non-CO₂ emission reductions that have occurred due to control measures implemented since 1990, officially reported emissions were used for Annex I countries (mainly countries that were already members of the OECD in 1990). These emission trends have been taken from the CRF emission data files which make up part of the National Inventory Reports (NIR) to the UNFCCC (UNFCCC, 2008, 2010, 2012). In addition, for non-CO₂ emission reductions in developing countries up to 2010, we used information on so-called CDM projects that have been implemented according to the “CDM pipeline” database maintained by the UNEP-Risø Centre (2011). This was done for methane recovery from coal mining and landfills, N₂O abatement in industrial processes and HFC-23 emission reductions from HCFC-22 manufacture.

Methods and data applied for all years except 2009 and 2010 are described below.

Energy / Fugitive / Biofuel

The data sources for **fugitive CO₂ emissions** and **CH₄ and N₂O from energy** are listed below. Data for fossil fuel production and use for 138 countries were taken from the IEA energy statistics for OECD and Non-OECD countries 1970-2008 (extended energy balances, in energy units) (IEA, 2007, 2010). This dataset comprises 94 sectors and 64 fuel types. For the countries of the Former Soviet Union and Former Yugoslavia a modified dataset was used to achieve a complete time series for the new countries from 1970 to 2008, the sum of which converges to the older dataset for the total Former Soviet Union and Yugoslavia. For another 62 countries, the aggregated IEA data for the regions ‘Other America’, ‘Other Africa’ and ‘Other Asia’ have been split using the sectoral IEA data per region together with total production and consumption figures per country of coal, gas and oil from energy statistics reported by the US Energy Information Administration (EIA, 2007, 2010).

Please note that the figures of CO₂ from fuel combustion and non-energy use of fuels in this report differ somewhat from the EDGAR 4.2 FT2010 dataset, for the following reasons:

- IEA energy statistics used for 1970-2008 may differ slightly due to revisions included in subsequent IEA releases. For EDGAR 4.2 FT2010 the releases of 2007 and 2010 were used for 1970-1999 and 2000-2008, respectively (IEA, 2007, 2010);
- the IEA uses the default CO₂ emission factors from the *Revised 1996 IPCC Guidelines*, which differ slightly due to different default oxidation factors (coal updated value +2%, oil products +1%, natural gas +0.5%) and updated defaults for carbon content for some fuels, the quality of which may vary considerably (mainly refinery gas, updated value -7%, coke oven gas -7%, blast furnace gas +7%, coke -1%);
- the IEA estimates CO₂ emissions from carbon released in fossil fuel use labelled in the sectoral energy balance as ‘non-energy use’ or ‘chemical feedstock’ using default fractions stored. For EDGAR 4.2 FT2010, for 1970-2008 default emission factors and methods from the *2006 IPCC Guidelines* were applied, which may give rise to considerable differences compared to the 1996 guidelines.

In addition, subtraction of the non-energy/feedstock fuel use part of the EDGAR 4.2 FT2010 dataset in order to combine it with the IEA CO₂ dataset also introduces some uncertainty.

To estimate CH₄ emissions from fossil fuel production and transmission, hard coal and brown coal production data have been separated into surface and underground mining based on various national reports. For gas transport and distribution, pipeline length was used as activity data. Pipeline length and material statistics are taken from reports on Europe by Eurogas and Marcogaz, national reports (e.g. the United States and Canada), UNFCCC (2008) and supplemental data from CIA (2008). Total amounts of natural gas flared (sometimes including gas vented) for most countries for 1994 onwards are primarily based on amounts of gas flared determined from the satellite observations of the intensity of flaring lights (Elvidge et al., 2009), reported by NOAA (2011). For other years before 1994 and for other countries emissions or emissions trends were supplemented by CO₂ trends from CDIAC (Marland *et al.*, 2006), EIA (2011) and UNFCCC (2010).

Biofuel data were also taken from IEA (2007). However, to avoid incomplete time series for large sectors, solid biomass consumption in the residential and commercial sectors in non-OECD countries were replaced by fuelwood and charcoal consumption from FAO (2007a). Vegetal waste used as fuel is based on the amounts of crop residues per country and fractions used as fuel based on Yevich and Logan (2003) and IPCC (2006). The amount of dung used as fuel is based on the total amount of manure produced per country and the fraction of total manure burned as fuel with fractions from IPCC (2006) and UNFCCC (2008). The results are rather close to the work of Fernandes *et al.* (2007) who made an extensive analysis of global and regional biofuel use in 2000. Charcoal production data were taken from IEA (2010) and supplemented or extrapolated using data from UN (2010) for 1990-2005 and FAO (2010) for pre-1990 data and 49 more countries not included in the IEA dataset.

Emission factors for fossil fuel production and use are based on the default values in the *2006 IPCC Guidelines* (IPCC, 2006). Methane emission factors for coal mining are based on average depths of coal production based on CIAB (1994), EURACOAL (2008), Kirchgessner *et al.* (1993) and include post mining emissions. Methane recovery from coal mining was included for twelve countries amounting to about 1.3 Tg in 1990 (of which about one-third was

allocated to the United States and Germany). Recovery in 2005 was estimated at 2.8 Tg (of which 50% in China and 25% in the United States (UNFCCC, 2010; Thakur *et al.*, 1994, 1996; EPA, 2008; Cheng *et al.*, 2011).

Emission factors for oil and gas production, transport and distribution were taken from IPCC (2006), supplemented with data from UNFCCC (2008), except for the emission factor for CH₄ from oil tanker transport which is from Rudd and Hill (2001). The CH₄ emission factor for venting and flaring has been derived from country-specific data reported to UNFCCC (2010), with the average value used as global default, applied to all other countries. The CO₂ emission factor excludes the indirect emissions through gas venting.

For N₂O from gasoline cars in road transport, the fraction of cars equipped with different types of catalytic converters was taken into account (based on various references). The factors for biofuel combustion were taken from the *2006 IPCC Guidelines*. For charcoal production the emissions factors are from Andreae (2011).

Industrial processes

Production data for the CO₂ sources cement, iron and steel, non-ferrous metals and various chemicals were based on UN Industrial Commodity Statistics (UN, 2006a), often supplemented for recent years by data from the US Geological Survey (USGS, 2007). The same method applied to paper, wine, beer and bread production. Data for other CO₂ sources such as production of lime, soda ash, ammonia, ferroalloys and non-ferrous metals were from USGS (2007, 2010), supplemented by data reported to the UNFCCC (2010). IFA (2007) was used for urea production (where it is assumed that the fossil carbon in CO₂ from ammonia production is stored) and FAO (2007a,c) for production of pulp, meat and poultry. Iron and steel production was further split into technologies (basic oxygen furnace, open hearth, electric arc furnace) using data from WSA (2010).

For the N₂O sources nitric acid, adipic acid and caprolactam, production data are based on UNFCCC (2010) and on smoothed and averaged SRIC (2005) data. For other industrial production for which no international statistics were available, such as silicon carbide and glyoxal, UNFCCC (2010) was used, though limited to Annex I countries.

However, for many countries interpolations and extrapolations were necessary to arrive at complete time series per country for 1970-2005/2008. Special

attention had to be given to new EIT countries, in particular to Former Soviet Union and Former Yugoslavia countries, to maintain consistency with the older totals for the former countries.

Emission factors for CO₂, CH₄ and N₂O are described in IPCC (2006). Note that emissions of CO₂ from cement production are only a proxy for cement clinker production. The N₂O emission factors for the production of adipic acid, nitric acid, caprolactam and glyoxal are based on IPCC (2006). For adipic acid, abatement is only assumed from 1990 onwards if indicated in UNFCCC (2010) combined with activity data from SRIC (2005). For nitric acid in 1970, all old technology is assumed, changing their technology towards 1990 into high pressure plants in non-Annex I countries and a mix of low and medium pressure plants in Annex I countries that matches reported emissions in UNFCCC (2010). In addition, about 20% of global total production, all in Annex II countries, is equipped with Non-Selective Catalytic Reduction (NSCR) technology (Choe *et al.*, 1993). The emission factors for the F-gases as by-product emissions were based on IPCC (2006), but modified to match global emissions to observations of atmospheric concentrations.

Global annual total production of HCFC-22 was taken from AFEAS (2008) and McCulloch and Lindley (2007) and included captive production, but was modified using UNFCCC (2010) and other data sources. Primary aluminium production statistics per country from UN (2006a) were combined with smelter types characterised by one of five technologies according to Aluminium Verlag (2007) and Hunt (2004) for China. The default emission factor for HFC-23 from HCFC-22 manufacture was set for non-OECD countries at the IPCC default for old, un-optimised plants and for OECD countries at a somewhat lower and which decreased over time to reflect atmospheric concentrations. Country-specific fractions of emission abatement were estimated for six Annex II countries based on reported emissions in UNFCCC (2010) and UNEP Risø Centre (2011) for other countries. For aluminium production the CF₄ emission factors per technology were based on large-survey factors for 1990 to 2002 reported by IAI (2006, 2008), but with modifications for Söderberg technologies to comply with atmospheric concentration trends, and for C₂F₆ based on the ratio to CF₄ reported in IPCC (2006) for default Tier 2 emission factors.

Global consumption of HFC-125, 134a (in three applications) and 143a was taken from AFEAS (2008),

for HFC-152a, 227ea, 245fa, 32 and 365mfc from Ashford *et al.* (2004) and for HFC-23, 236fa and 43-10-mee from UNFCCC (2008). Global HFC consumption was distributed to countries according to their share in global CFC-12 or CFC-11 consumption (ODP consumption statistics from the UN Ozone Secretariat) depending on their characteristics (either mostly for refrigeration/air-conditioning or mostly for other applications, largely foams/aerosols) and calibrated to regional totals calculated by Ashford *et al.* (2004). Global emission factors for HFC use were derived from the emissions also reported by these data sources, except for HFC-125 and 143a which were from Ashford *et al.* (2004).

Global consumption data of PFCs (and SF₆) for semiconductor manufacture for Annex I countries in 1990 to 2005 were based on UNFCCC (2008) and the *National Inventory Report 2008* of Japan, for Taiwan on Lu (2006) and for other non-Annex I countries for 1995 and 2005 based on their global share in semiconductor manufacture (SEMI, 1998; SEMI, 2009). The trend from 1982 to 2005 of PFC use within four regions/countries (the United States, Japan, Europe and Rest of the World) was estimated from world market sales (SIA, 2006). Global CF₄ and SF₆ consumption and consumption in Taiwan for the production of flat panel displays for 2003 is from Lu (2006); trends and market shares per country from SEMI (2007). National consumption of PFCs for PV cells is based on the production per country of PV systems in m² (estimated from production statistics in MW for 1985-2003: Kammen, 2005; and for 1990, 1995, 2000-2007: Jäger-Waldau, 2008). The emission factors are from IPCC (2006), for semiconductors and FPD using the Tier 2a factors and for PV production taking into account the fraction of thin film production per country and assuming that 50% of the manufacturers uses PFCs. PFC consumption for other PFC uses was based on data for PFC use in fire extinguishing and air-conditioning, together with use as solvent reported by a few Annex I countries (UNFCCC, 2008), extrapolated to all Annex I countries and assuming an emission factor of 1.

Global consumption of SF₆ per application was taken from Knopman and Smythe (2007). For SF₆ containing switchgear, equipment manufacture and utility stock estimates were adjusted using the method in Mais and Brenninkmeijer (1998) with the regional and per country distribution based on various references (*e.g.* Mais and Brenninkmeijer, 1998; Bitsch, 1998, personal communication) and for missing countries and years

based on the trend in the increase of electricity consumption as a proxy for GIS stock additions. For primary magnesium production and diecasting global consumption was distributed using production statistics from USGS (2007) and IMA (1999a,b) and others for the number of diecasting companies per country. Other sources were distributed as follows: sport shoes among Annex I countries based on GDP, tyres according to reported consumption in Germany (UNFCCC, 2008), sound insulating windows mainly in Germany with 10% used in neighbouring countries, aluminium production as reported in UNFCCC (2010), accelerators were distributed according to the number of high-energy physics laboratories and miscellaneous sources according to the number of airborne early warning systems such as AWACs. A major revision was made to soundproof window production and small revisions to other sources, partly based on UNFCCC (2010).

Note that both the variables for distributing global total consumption per source category and the emission factors vary widely between different plants and countries. This implies that the estimated emissions of F-gases at country level should be considered as very uncertain (an order of magnitude).

Please note that CO₂ from fossil carbon accounted for in this sector (such as from ammonia and carbide production, iron and steel production using a blast furnace and metal production through smelting processes with carbon anode consumption) and CO₂ from urea application in agriculture have been subtracted from the EDGAR 4.2 FT2010 data. This avoids double counting compared with the IEA CO₂ dataset for fuel combustion that includes these emissions (see section on Energy).

Solvent and other product use

For N₂O from the use of anaesthesia, an amount of 24 gN₂O and 34 gN₂O per capita in 2000 was used for EIT and Annex II countries, respectively, based on the average values in UNFCCC (2010) and tentatively set at 5 g/cap/year for non-Annex I countries, based on Kroeze (1994). A global declining rate of 20% between 1990 and 2005 was assumed as observed for total Annex I countries.

For N₂O from aerosol spray cans, an amount of 10 gN₂O per capita in 2000 was used for Annex I countries based on the average values in UNFCCC (2010), and none for non-Annex I countries. A uniform inclining rate from 1990 to 2005 of 50% was assumed as observed for total Annex I countries.

Agriculture

In general, the IPCC (2006) methodology and new default emission factors for CO₂, CH₄ and N₂O were used to estimate agricultural emissions, except for the instances specified below. Please note that N₂O emissions from agriculture as reported in EDGAR 4.2 FT2010 are substantially lower than those presently reported by most Annex I countries due to two markedly lower emission factors: 1) the default IPCC emission factor (“EF1”) for direct soil emissions of N₂O from the use of synthetic fertilisers, manure used as fertiliser and from crop residues left in the field has been reduced by 20%; and 2) the default emission factor (“EF5”) for indirect N₂O emissions from nitrogen leaching and run-off been reduced by 70% compared to the values recommended in the *1996 IPCC Guidelines* and the *IPCC Good Practice Guidance* (IPCC, 1997, 2000).

Livestock numbers were taken from FAO (2007b,c, 2010). For enteric fermentation by cattle, country-specific methane emission factors were calculated following the IPCC methodology (IPCC, 2006) using country-specific milk yield (dairy cattle) and carcass weight (other cattle) trends from FAO (2007c) to estimate the trends in the emission factors. For other animal types, regional emission factors from IPCC (2006) were used.

Livestock numbers were combined with estimates for animal waste generated per head to estimate the total amount of animal waste generated. Nitrogen excretion rates for cattle, pigs and chicken in Europe were based on the CAPRI model (Pérez, 2005; Britz, 2005; Leip *et al.*, 2007) and for all other countries and animal types in IPCC (2006). The trend in carcass weight was used to determine the development in nitrogen excretion over time. The shares of different animal waste management systems were based on regional defaults provided in IPCC (2006) and regional trend estimates for dairy and non-dairy cattle for the fractions stall-fed, extensive grazing and mixed systems from Bouwman *et al.* (2005). Methane emissions from manure management were estimated by applying default IPCC emission factors for each country and temperature zone. For the latter, the 1x1 degree grid map for non-dairy cattle from Lerner *et al.* (1988) was used and the annual average temperature per grid cell from New *et al.* (1999) to calculate the livestock fractions of the countries in 19 annual mean temperature zones for cattle, swine and buffalo and three climates zones for other animals (cold, temperate, warm). N₂O emissions

from manure management were based on distribution of manure management systems from Annex I countries reporting to the UNFCCC (2008), Zhou *et al.* (2007) for China and IPCC (2006) for the rest of the countries.

The total area for rice cultivation was obtained from FAO (2007d, 2010), which was split over different ecology types (rainfed, irrigated, deep water and upland) using IRRI (2007). The total harvested area of rice production in China was increased by 40%, due to recognition that official harvested rice area statistics for China largely underestimate the actual area (Denier van der Gon, 1999; 2000; personal communication, 2000). However, methane emission factors were not taken from IPCC (2006) but from a review of Neue (1997), and country-specific studies by Mitra *et al.* (2004), Gupta *et al.* (2002) and IIASA (2007). For the period 1970-2000 a trend in the emission factors was assumed based on data from Denier van der Gon (1999, 2000).

The same data as described above for manure management were used to estimate N₂O emissions from the use of animal waste as fertilizer by taking into account the loss of nitrogen that occurs from manure management systems before manure is applied to soils and additional nitrogen introduced by bedding material. N₂O emissions from fertilizer use and CO₂ from urea fertilization were estimated based on IFA (2007) and FAO (2007e) statistics and emission factors from IPCC (2006).

CO₂ emissions from liming of soils were estimated from Annex I country reports to the UNFCCC (2010), and on the use of ammonium fertilizers for other countries (FAO, 2007e) as liming is needed to balance the acidity caused by ammonium fertilizers.

Areas of cultivated histosols were estimated by combining three different maps: the FAO climate map (FAO Geonetwork, 2007a), the FAO soil map (FAO Geonetwork, 2007b) and the land use map of Goldewijk *et al.* (2007). However, where available areas reported by Annex I countries to the UNFCCC (2008) were used. Separate N₂O emission factors were applied for tropical and non-tropical regions (IPCC, 2006).

Nitrogen and dry-matter content of agricultural residues were estimated based on cultivation area and yield for 24 crop types from FAO (2007d) and IPCC (2006) factors. The fractions of crop residues removed from and burned in the field were estimated using data of Yevich and Logan (2003) and UNFCCC (2008) for

fractions burned in the field by Annex I countries. Subsequently, N₂O emissions from crop residues left in the field and non-CO₂ emissions from field burning of the residues were calculated using IPCC (2006) emission factors.

Indirect N₂O emissions from leaching and runoff were estimated based on nitrogen input to agricultural soils as described above. Leaching and run-off was assumed to occur in other areas than non-irrigated dry-land regions, which were identified based on FAO (1999; 2000; 2005) and Murray *et al.* (1999). The fraction of nitrogen lost through leaching and runoff was based on a study of Van Drecht *et al.* (2003). IPCC (2006) emission factors were used for indirect N₂O from leaching and runoff, as well as from deposition of agricultural NH₃ and NO_x emissions.

For savannah burning, estimates for areas burned are based on satellite measurements (see next section) and emission factors from IPCC (2006).

Large-scale biomass burning

For estimating the amounts of biomass burned in large-scale fires the three key parameters have to be multiplied: (a) area burned, (b) aboveground biomass density (fuel load) (kg/ha), and (c) fraction of aboveground biomass burned (combustion completeness). Country-specific data for large-scale biomass burning (total amount of dry matter burned, which were subdivided into tropical and non-tropical forest fires, savannah fires and grassland fires), have been taken from the gridded data at 1x1 degree grid of the *Global Fire Emissions Database* (GFED version 2; Van der Werf *et al.*, 2006) for the years 1997-2005. For years prior to 1997, the GFED v2.0 data were scaled back to 1970 using regional biomass burning trends from the RETRO dataset, covering the period 1960-2000 (Schultz *et al.*, 2008). GFED data for agricultural areas were attributed to savannah and grassland fires. There is an insignificant overlap with the EDGAR category for agricultural waste burning. The GFED data on biomass burning were estimated using burned area time series for 2001-2005 derived from the MODIS satellite sensors in combination with the fuel load estimated by the satellite-driven Carnegie-Ames-Stanford-Approach (CASA) biogeochemical model that was adjusted to account for fires. The 1997-2000 period was included using fire counts from the VIRS/ATSR sensors. The burning areas were mapped at 0.5x0.5 km spatial resolution. For some countries a correction was made to the time series for the

allocation of biomass burned in savannahs and tropical forests. Since these sources have different emission factors, total emissions have changed for these countries. For 2006-2008 the trend in the activity data from the GFED v3 model (Van der Werf et al., 2010) was used, since the new dataset is not consistent with the previous version. The non-CO₂ emission factors for large scale biomass burning have been updated using data from Andreae (2011). The GHG emission factors were not taken from IPCC (2006), (which were from Andreae and Merlet (2001)), but updated values from Andreae (2011), including the carbon content of 0.47 kg C/kg dry matter, which is the default value for tropical forest. For greenhouse gas accounting purposes, net CO₂ emissions from savannah and grassland fires have been assumed to be zero (organic carbon in a short cycle). There is a large uncertainty in the assumptions for the carbon contents and the fraction of carbon that is actually being burned and thus in the amount of burned carbon.

CO₂ emissions from large-scale biomass burning are only one component of emissions from forest fires. Roughly half of the aboveground biomass is not burned, but rather decomposes over time. This results in delayed decay emissions of approximately the same level of magnitude as the direct emissions from the fires but distributed over a period of 10 to 20 years (IPCC, 2006). Post-burn CO₂ emissions have been estimated from the same activity data as direct burning emissions by assuming that remaining aboveground biomass decays in the 15 year² after the year the fire or deforestation occurred, *i.e.* 1/15 per year and a carbon content of 0.47 kg C/kg dry matter tropical forest from IPCC (2006).

For CO₂ emissions from drained peatlands the comprehensive dataset of Joosten (2009) was used, comprising of activity data for 1990 and 2008 and CO₂ emission factors per hectare of drained peatland. For intervening years, the activity data were linearly interpolated, except for Indonesia, for which the trend in the area of palm oil plantations was used as proxy for the interpolation. For years before 1990 a linear increase from 0 in 1970 was assumed, with a few exceptions, where the area was assumed to remain constant prior to 1990. In EDGAR 4.2 FT2010 the amount of peat burned (in Indonesia only) has been separated from the amount of tropical forest burned in the GFED v2.0 dataset and different emission factors have been applied for most substances (Christian et al., 2003; Weiss (2002), resulting in different emissions.

In addition, enhanced N₂O emissions that occur after large-scale tropical biomass burning (Bouwman *et al.*, 1997) were calculated from the post-burn biomass dataset.

Waste handling

To estimate the amount of organic solid waste in landfills three key parameters have to be determined: (a) Municipal Solid Waste (MSW) generated per year (kg/cap), (b) fraction of total solid waste that is landfilled, and (c) fraction of Degradable Organic Carbon (DOC) in the MSW (%). Total and urban population figures were taken from UN (2006b). The amounts of Municipal Solid Waste (MSW) generated are the primary statistics for emissions from landfills. For 70 countries, the 2006 IPCC Guidelines provide country-specific data for 2000 of the amount of MSW generated per year per capita (urban capita in case of non-Annex I countries) and the fraction landfilled and incinerated. For 58 more countries, country-specific values for the MSW generation per capita were found in the literature. For the remaining 91 countries, the waste generation per capita in 2000 was estimated using an exponential fit of the IPCC (2006) country-specific data for 70 countries of MSW/cap for 2000 to GDP/cap. For Annex I countries trend data for MSW generation/cap are available for the period 1990-2005 (UNFCCC, 2008). For other years and for other countries for which these data are not available, extrapolation from 2000 back and forward was done using the exponential fit mentioned above. When the country-specific fraction of MSW landfilled was missing, regional defaults provided in IPCC (2006) were used. In addition, UN statistics on MSW treatment may provide country-specific data for years other than 2000. Based on regional defaults for the composition of MSW, IPCC (2006) provides regional defaults for the fraction of Degradable Organic Carbon (DOC). For Annex I countries, country-specific data from UNFCCC (2008) were used (sometimes including a change over time) and for 94 Non-Annex I countries, country-specific MSW composition data were found, from which the average DOC value was calculated. However, in version 4.2, for a number of Annex I countries, the DOC fraction was adjusted to better reflect the overall emission trends for landfills as reported to UNFCCC (2008).

Calculation of methane emissions from landfills using the First Order Decay (FOD) model of IPCC (2006), the Methane Conversion Factor (MCF), requires the k-value and the Oxidation Factor (OX). The MCF is

characterised by the type of landfill: managed aerobic or anaerobic, unmanaged deep or shallow. Apart from country-specific time series which are available for 11 Annex I countries, two sets of MCF time series for Annex I and non-Annex I countries were determined based on assumptions about the fractions of the four landfill types over time. For the k-value, which is the methane generation rate (inversely proportional to the half life value of the DOC), default regional MSW composition weighted k-values for four climate zones (tropical dry/wet and non-tropical dry/wet) were provided by IPCC (2006). For EDGAR 4.2 FT2010, country-specific values were calculated using the country-specific fractions of the population (urban population for non-Annex I countries) in each climate zone. The IPCC default values were used to estimate the Oxidation Factor (0.1 for Annex I and 0 for non-Annex I). Finally, the amounts of methane recovered (and used or flared) to be subtracted from the gross methane emissions, were taken as reported by Annex I countries in UNFCCC (2010) and for 23 non-Annex I countries from CDM projects reported by the UNEP Risø Centre (2011). Total recovery in 2010 is estimated at 12.9 Tg CH₄, half of which was by the United States and almost one fifth by the United Kingdom; about 13% is recovered by non-Annex I countries.

For domestic wastewater, total organics in wastewater (BOD₅) was estimated using regional default or country-specific default values for BOD₅ generation per capita per day provided by IPCC (2006). For industrial wastewater, total organically degradable material in wastewater from industry was calculated per type of industry from WW generation per ton of product and COD values (chemical oxygen demand (industrial degradable organic component in wastewater) in kg/m³ WW, using defaults from IPCC (2006). Production statistics for industry types that produce most organics in wastewater are available from UN (2006a). Examples are meat and poultry, raw sugar, alcohol, pulp and organic chemicals. To estimate methane emissions from domestic wastewater, additional information is required on the WW treatment systems, such as sewer systems (to wastewater treatment plants (WWTP) or to raw discharge), latrines by type, open pits and septic tanks. Regional or country-specific default fractions for 2000 were from IPCC (2006). In addition, country-specific fractions of improved sanitation over time from Van Drecht *et al.* (2009) were used, based on the UN Water Supply and Sanitation (WSS) dataset and other national reports, and fractions reported by Doorn and Liles (1999). For

industrial methane emissions, fractions of on-site treatment in WWTP, sewer with and without city-WWTP, and raw discharge were based on regional values reported by Doorn *et al.* (1997). To calculate methane emissions from wastewater, default factors provided by IPCC (2006) per type of WW treatment were used, with default methane correction factors (MCF) per type of treatment. For Annex I countries, OECD or EIT average fractions of methane recovered in WWTPs (and either used as biogas or flared) were used, except for five countries for which country-specific values reported in UNFCCC (2008) were used.

To estimate N₂O emissions from wastewater, the activity data used is the total annual amount of nitrogen in the wastewater, which was calculated from annual protein consumption per capita reported by FAO (2007f), using correction factors for non-consumed protein and for the fraction of industrial and commercial protein that is co-discharged. For the correction factors and the N₂O emission factor, defaults provided in IPCC (2006) were used.

Other waste sources are incineration, with activity data from UNFCCC (2008) and IPCC (2006) and extrapolations assuming a fixed ratio to landfilling, and composting (UNFCCC, 2008; ECN, 2008; CCC, 2008).

Other sources

Indirect N₂O emissions from atmospheric deposition of nitrogen of NO_x and NH₃ emissions from non-agricultural sources, mainly fossil fuel combustion and large scale biomass burning, were estimated using nitrogen in NO_x and NH₃ emissions from these sources as activity data, based on preliminary EDGAR 4.2 FT2010 data for these gases. The same IPCC (2006) emission factor was used for indirect N₂O from atmospheric deposition of nitrogen from NH₃ and NO_x emissions as was used for agricultural emissions.

General Note

We note that EDGAR 4.2 FT2010 estimates for all sources have been made for all years. For more detailed data of the EDGAR 4.2 FT2010 dataset, including the complete period 1970-2010 and a few small corrections after the release of the dataset for some sources of F-gas emissions in 2010 (HFC-23 from HCFC manufacture and PFCs from solvent use and from PV cell manufacture) and preliminary estimates for more recent years we refer to the EDGAR

version 4 website at edgar.jrc.ec.europa.eu. Aggregated preliminary estimates can also be found at PBL (2013) and for CO₂ in Olivier et al. (2013).

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TOTAL GHG EMISSIONS

1990 Greenhouse-gas emissions

 million tonnes of CO₂ equivalent using GWP-100

	CO ₂						CH ₄					
	Fuel comb.	Fugitive	Industrial processes	Other	Total	Share of energy	Energy	Agricult.	Waste	Other	Total	Share of energy
World *	20 988.7	451.2	839.2	5 987.4	28 266.4	75.8%	2 075.4	3 185.8	1 068.8	270.2	6 600.2	31.4%
<i>Annex I Parties</i>	13 900.6	206.4	456.6	850.5	15 414.1	91.5%	1 043.2	842.7	555.4	30.5	2 471.8	42.2%
<i>Annex II Parties</i>	9 794.8	78.9	271.8	379.1	10 524.5	93.8%	442.3	542.1	444.2	14.6	1 443.3	30.6%
<i>North America</i>	5 296.9	24.3	70.2	136.0	5 527.4	96.3%	282.0	191.6	229.3	8.2	711.2	39.7%
<i>Europe</i>	3 154.1	39.2	129.8	183.3	3 506.3	91.1%	127.9	210.8	182.5	2.2	523.4	24.4%
<i>Asia Oceania</i>	1 343.9	15.4	71.8	59.7	1 490.8	91.2%	32.4	139.7	32.4	4.2	208.7	15.5%
<i>Annex I EIT</i>	3 976.6	123.4	172.4	470.1	4 742.4	86.5%	593.0	276.0	99.7	15.9	984.5	60.2%
<i>Non-Annex I Parties</i>	6 469.4	244.7	382.6	5 136.9	12 233.6	54.9%	1 031.4	2 343.1	513.4	239.7	4 127.6	25.0%
<i>Annex I Kyoto Parties</i>	8 778.3	180.8	381.1	694.8	10 035.1	89.3%	784.4	631.2	333.4	25.1	1 774.0	44.2%
Int. marine bunkers	362.3	-	-	-	362.3	100.0%	0.7	-	-	-	0.7	100%
Int. aviation bunkers	256.4	-	-	-	256.4	100.0%	0.0	-	-	-	0.0	100%
Non-OECD Total	9 219.3	359.1	495.3	5 520.6	15 594.3	61.4%	1 496.8	2 501.1	568.7	253.4	4 820.0	31.1%
OECD Total	11 150.7	92.1	343.9	466.7	12 053.4	93.3%	577.8	684.7	500.1	16.8	1 779.4	32.5%
Canada	428.2	2.9	9.1	25.7	465.8	92.5%	32.2	18.9	22.1	2.9	76.1	42.4%
Chile	31.0	0.7	2.0	1.0	34.7	91.5%	3.0	5.8	3.0	0.2	12.0	25.1%
Mexico	265.3	2.9	16.3	39.1	323.5	82.9%	29.0	52.5	15.3	1.5	98.3	29.5%
United States	4 868.7	21.4	61.1	110.3	5 061.6	96.6%	249.8	172.7	207.2	5.4	635.1	39.3%
OECD Americas	5 593.2	27.9	88.4	176.1	5 885.6	95.5%	314.1	249.9	247.5	10.0	821.5	38.2%
Australia	260.0	4.2	6.0	25.9	296.1	89.2%	24.6	75.6	11.3	3.6	115.0	21.4%
Israel	33.5	-	1.5	0.3	35.3	94.9%	0.1	0.7	1.1	0.0	1.9	6.3%
Japan	1 061.6	11.1	65.4	28.7	1 166.8	91.9%	6.9	40.5	19.0	0.5	66.9	10.3%
Korea	229.3	1.5	17.6	0.4	248.9	92.8%	8.8	15.0	7.5	0.1	31.3	28.0%
New Zealand	22.3	0.1	0.4	5.1	28.0	80.2%	0.9	23.6	2.1	0.0	26.7	3.4%
OECD Asia Oceania	1 606.7	16.9	90.9	60.4	1 775.0	91.5%	41.2	155.4	41.0	4.3	241.9	17.0%
Austria	56.4	0.5	3.7	0.6	61.2	93.0%	2.0	5.0	3.0	0.1	10.0	20.3%
Belgium	107.9	1.3	5.3	0.8	115.4	94.7%	2.7	6.6	3.1	0.0	12.4	21.6%
Czech Republic	155.1	3.0	5.3	2.0	165.6	95.5%	6.4	8.9	2.7	0.2	18.2	35.3%
Denmark	50.6	0.3	1.0	3.7	55.6	91.5%	0.6	5.5	1.9	-	8.0	7.6%
Estonia	36.1	-	0.6	14.1	50.8	71.1%	1.2	1.7	0.5	-	3.4	35.0%
Finland	54.4	0.2	1.2	53.7	109.5	49.9%	0.8	2.6	6.7	0.0	10.1	7.6%
France	352.6	4.1	24.6	8.0	389.3	91.6%	20.3	40.7	14.6	0.1	75.7	26.8%
Germany	949.7	13.1	26.6	40.6	1 029.9	93.5%	36.8	41.8	36.6	0.2	115.4	31.8%
Greece	70.1	0.1	6.2	0.8	77.3	90.9%	1.6	3.7	2.3	0.1	7.7	20.6%
Hungary	66.4	0.5	2.8	1.1	70.8	94.5%	2.1	5.3	2.5	0.0	10.1	21.1%
Iceland	1.9	-	0.1	17.6	19.6	9.6%	0.0	0.2	0.1	0.0	0.3	2.0%
Ireland	30.5	-	0.9	10.9	42.3	72.1%	1.2	10.8	1.9	0.0	13.9	8.7%
Italy	397.4	4.5	22.5	3.1	427.5	94.0%	8.6	21.0	17.3	0.3	47.1	18.2%
Luxembourg	10.4	-	0.8	0.0	11.2	92.8%	0.1	0.8	0.1	0.0	1.0	10.1%
Netherlands	155.8	0.7	1.3	9.5	167.3	93.6%	6.3	11.6	12.2	0.1	30.1	20.8%
Norway	28.3	2.1	0.8	1.2	32.4	94.0%	6.1	2.2	5.8	0.1	14.1	43.0%
Poland	342.1	0.0	9.9	27.5	379.6	90.1%	74.8	22.8	9.9	0.1	107.6	69.5%
Portugal	39.3	0.2	3.5	0.3	43.3	91.2%	0.7	4.3	4.7	0.1	9.9	7.2%
Slovak Republic	56.7	0.2	3.0	0.4	60.3	94.4%	1.1	4.0	1.3	0.0	6.5	17.4%
Slovenia	13.3	0.0	0.7	0.4	14.5	92.1%	1.0	1.4	0.6	0.0	3.0	32.8%
Spain	205.2	1.8	15.0	2.0	224.0	92.4%	5.4	17.7	8.9	0.8	32.8	16.4%
Sweden	52.8	0.9	2.0	15.1	70.8	75.8%	1.1	3.4	7.0	0.0	11.5	9.6%
Switzerland	41.6	0.0	2.6	2.3	46.4	89.6%	1.1	3.7	1.0	0.1	5.9	18.8%
Turkey	126.9	4.2	12.5	1.4	145.0	90.4%	7.9	24.5	11.4	0.1	43.9	18.0%
United Kingdom	549.3	9.2	11.8	13.2	583.5	95.7%	32.7	29.1	55.4	0.1	117.3	27.8%
OECD Europe	3 950.8	47.2	164.6	230.2	4 392.8	91.0%	222.5	279.3	211.6	2.6	716.0	31.1%
<i>European Union - 27</i>	4 052.5	42.4	165.0	221.3	4 481.2	91.4%	230.1	278.3	207.7	2.5	718.6	32.0%

* Total World includes Non-OECD total, OECD total as well as international bunkers.

 Sources: IEA, Sectoral Approach for CO₂ emissions from fuel combustion. EDGAR 4.2 FT2010 database for other emissions. In general, estimates for emissions other than CO₂ from fuel combustion are subject to significantly larger uncertainties.

1990 Greenhouse-gas emissions

million tonnes of CO₂ equivalent using GWP-100

Energy	N ₂ O					Share of energy	HFCs	PFCs	SF ₆	Total			GHG / GDP PPP *	
	Industrial processes	Agriculture	Other	Total	Industrial processes		Total	Share of energy						
255.6	239.9	1 805.6	526.9	2 827.9	9.0%	75.8	115.6	114.1	38 000.2	62.6%	1.05	World		
147.4	213.7	623.0	162.1	1 146.2	12.9%	61.5	86.7	83.9	19 264.3	79.4%	0.76	Annex I Parties		
115.3	166.3	408.3	108.9	798.8	14.4%	56.5	65.3	76.9	12 965.1	80.5%	0.60	Annex II Parties		
76.0	56.4	170.1	52.0	354.5	21.4%	29.6	29.4	46.2	6 698.2	84.8%	0.77	North America		
30.0	98.7	168.2	37.7	334.6	9.0%	17.1	26.4	15.8	4 423.6	75.8%	0.49	Europe		
9.3	11.2	70.0	19.3	109.7	8.4%	9.8	9.5	14.9	1 843.3	76.0%	0.49	Asia Oceania		
28.2	47.2	192.4	50.5	318.3	8.8%	5.0	20.9	5.0	6 076.2	77.7%	1.75	Annex I EIT		
88.0	26.2	1 182.5	364.8	1 661.6	5.3%	14.3	28.9	30.2	18 096.2	43.3%	1.67	Non-Annex I Parties		
73.5	166.8	435.1	113.4	788.8	9.3%	32.3	65.4	39.7	12 735.3	77.1%	0.75	Annex I Kyoto Parties		
15.6	-	-	-	15.6	100%	-	-	-	378.6	100.0%	..	Int. marine bunkers		
4.6	-	-	-	4.6	100%	-	-	-	261.0	100.0%	..	Int. aviation bunkers		
105.6	62.2	1 299.4	400.4	1 867.6	5.7%	15.9	46.5	29.8	22 374.1	50.0%	1.85	Non-OECD Total		
129.8	177.8	506.1	126.5	940.1	13.8%	60.0	69.1	84.4	14 986.5	79.7%	0.62	OECD Total		
7.0	11.8	17.0	6.8	42.6	16.4%	0.4	8.6	4.0	597.5	78.7%	0.80	Canada		
0.3	0.0	4.1	0.7	5.1	5.7%	-	0.0	0.0	51.8	67.7%	0.58	Chile		
2.2	1.0	31.0	5.8	40.1	5.6%	1.6	0.5	0.9	465.0	64.4%	0.56	Mexico		
69.0	44.6	153.1	45.1	311.9	22.1%	29.2	20.8	42.2	6 100.8	85.4%	0.77	United States		
78.5	57.5	205.2	58.5	399.7	19.7%	31.2	30.0	47.0	7 215.0	83.4%	0.75	OECD Americas		
2.7	0.8	50.4	9.2	63.1	4.2%	0.6	3.9	0.4	479.1	60.8%	1.13	Australia		
0.1	0.3	0.7	0.4	1.5	9.1%	0.0	0.0	1.0	39.8	84.9%	0.48	Israel		
6.3	10.3	9.7	9.8	36.2	17.5%	9.2	4.7	14.4	1 298.1	83.6%	0.40	Japan		
1.6	1.1	4.9	2.2	9.8	16.1%	1.9	0.8	3.5	296.1	81.4%	0.63	Korea		
0.3	-	9.9	0.3	10.5	2.4%	0.0	0.9	0.0	66.1	35.7%	1.02	New Zealand		
11.0	12.5	75.7	21.9	121.1	9.1%	11.7	10.3	19.3	2 179.2	76.9%	0.50	OECD Asia Oceania		
0.6	0.8	2.9	0.7	5.1	12.6%	0.0	1.0	0.4	77.8	76.6%	0.40	Austria		
0.7	3.9	3.3	1.1	9.0	8.1%	0.0	0.0	0.1	137.0	82.3%	0.55	Belgium		
1.9	1.3	5.2	1.3	9.7	19.8%	0.0	0.0	0.0	193.5	86.1%	1.14	Czech Republic		
0.5	1.1	5.8	0.6	8.0	6.0%	0.0	0.0	0.1	71.7	72.5%	0.55	Denmark		
0.5	-	1.2	0.2	1.9	24.9%	-	0.0	0.0	56.1	67.4%	3.45	Estonia		
1.4	1.5	3.8	0.7	7.4	19.0%	0.0	0.0	0.1	127.1	44.7%	1.10	Finland		
3.6	26.7	35.5	4.8	70.7	5.1%	4.7	1.6	3.2	545.2	69.8%	0.39	France		
11.1	20.5	33.6	8.0	73.2	15.2%	2.6	4.4	5.6	1 231.0	82.1%	0.60	Germany		
0.8	1.1	4.5	1.1	7.5	11.1%	0.5	1.7	0.1	94.8	76.6%	0.54	Greece		
0.7	3.2	5.4	0.8	10.1	6.7%	0.0	0.7	0.0	91.7	76.1%	0.67	Hungary		
0.0	0.0	0.3	0.0	0.4	6.1%	-	1.0	0.0	21.4	9.0%	3.27	Iceland		
0.2	0.9	6.6	0.3	8.2	3.0%	0.0	0.0	0.0	64.4	49.6%	1.04	Ireland		
2.4	7.2	15.6	5.2	30.3	7.8%	2.0	0.9	1.2	509.0	81.1%	0.38	Italy		
0.0	-	0.3	0.1	0.4	12.4%	0.0	0.0	-	12.5	83.8%	0.77	Luxembourg		
0.7	5.8	7.2	1.3	15.0	4.7%	2.8	3.1	0.3	218.6	74.8%	0.56	Netherlands		
0.4	2.1	1.9	0.5	4.9	8.1%	-	6.3	2.3	60.0	61.5%	0.44	Norway		
2.1	3.4	19.0	2.9	27.3	7.5%	0.0	0.4	0.1	515.0	81.3%	1.65	Poland		
0.5	0.5	2.9	0.9	4.8	11.2%	0.0	0.0	0.1	58.1	70.2%	0.36	Portugal		
1.1	1.0	2.9	0.4	5.5	20.2%	-	0.1	-	72.4	81.8%	1.14	Slovak Republic		
0.1	-	1.0	0.2	1.3	9.5%	-	0.8	0.0	19.6	73.8%	0.60	Slovenia		
1.9	3.0	15.5	4.5	24.9	7.6%	2.0	3.8	0.4	287.8	74.5%	0.37	Spain		
1.0	0.8	4.0	0.9	6.7	15.1%	0.0	0.7	0.2	89.9	62.1%	0.43	Sweden		
0.4	0.2	1.6	0.6	2.8	15.1%	0.0	0.3	0.6	56.1	76.9%	0.24	Switzerland		
3.9	0.2	22.3	2.6	29.0	13.6%	-	0.5	2.0	220.4	64.9%	0.51	Turkey		
3.5	22.6	22.8	6.4	55.3	6.3%	2.6	1.6	1.1	761.3	78.1%	0.58	United Kingdom		
40.3	107.8	225.2	46.1	419.4	9.6%	17.1	28.8	18.0	5 592.2	76.2%	0.55	OECD Europe		
37.5	112.4	224.8	45.3	420.1	8.9%	17.1	22.6	13.1	5 672.7	76.9%	0.59	European Union - 27		

* GHG / GDP PPP ratio is expressed in kg of CO₂-equivalent per 2005 USD.

1990 Greenhouse-gas emissions

 million tonnes of CO₂ equivalent using GWP-100

	CO ₂						CH ₄					
	Fuel comb.	Fugitive	Industrial processes	Other	Total	Share of energy	Energy	Agricult.	Waste	Other	Total	Share of energy
Non-OECD Total	9 219.3	359.1	495.3	5 520.6	15 594.3	61.4%	1 496.8	2 501.1	568.7	253.4	4 820.0	31.1%
Albania	6.2	0.1	0.3	0.7	7.3	86.6%	0.8	1.6	0.2	0.0	2.5	31.0%
Armenia	20.5	-	0.7	0.4	21.5	95.1%	1.3	1.3	0.3	0.0	2.9	45.4%
Azerbaijan	55.0	0.0	0.6	0.3	55.9	98.5%	5.8	4.3	1.4	0.0	11.4	50.6%
Belarus	124.4	0.0	1.9	44.0	170.2	73.1%	1.1	14.3	3.3	0.0	18.7	6.1%
Bosnia-Herzegovina	23.7	-	0.2	0.4	24.3	97.5%	2.8	1.6	0.2	0.0	4.6	60.1%
Bulgaria	74.9	1.1	4.1	0.3	80.4	94.5%	1.3	5.5	8.8	0.1	15.7	8.4%
Croatia	21.5	0.2	1.4	0.1	23.1	93.8%	1.6	1.8	0.8	0.0	4.2	37.8%
Cyprus *	3.9	-	0.5	0.0	4.4	88.6%	0.0	0.2	0.2	-	0.4	3.3%
Georgia	33.3	0.0	0.3	0.4	34.0	97.9%	1.7	2.6	0.7	0.0	5.0	34.5%
Gibraltar	0.2	-	-	0.0	0.2	99.8%	0.0	-	0.0	-	0.0	12.0%
Kazakhstan	236.4	6.1	6.7	16.2	265.5	91.4%	33.7	25.6	3.2	6.8	69.2	48.6%
Kosovo **	..	..	..	..	..	..	..	..	..	..	..	..
Kyrgyzstan	22.5	0.0	0.7	0.7	23.8	94.2%	0.7	4.3	0.6	0.2	5.8	12.2%
Latvia	18.6	-	0.9	5.2	24.8	75.3%	1.6	3.2	0.6	0.0	5.5	30.0%
Lithuania	33.1	0.0	1.8	6.1	41.0	80.8%	1.6	4.9	1.1	0.0	7.6	21.3%
FYR of Macedonia	8.5	-	0.3	0.1	8.9	95.7%	0.3	1.1	0.2	0.1	1.7	18.7%
Malta	2.3	-	0.0	0.0	2.3	99.6%	0.0	0.1	0.1	-	0.2	1.6%
Republic of Moldova	30.2	-	1.3	0.2	31.6	95.4%	1.4	2.2	0.5	0.0	4.1	34.8%
Montenegro **	..	..	..	..	..	..	..	..	..	..	..	..
Romania	167.5	0.5	9.0	2.0	178.9	93.9%	18.1	15.7	3.6	0.0	37.4	48.3%
Russian Federation	2 178.8	83.2	98.4	355.0	2 715.4	83.3%	422.5	132.5	54.3	15.1	624.5	67.7%
Serbia **	61.4	0.2	2.2	0.6	64.4	95.6%	4.5	6.2	1.2	0.0	11.9	37.9%
Tajikistan	10.9	0.0	0.6	0.1	11.5	94.5%	0.8	2.9	0.6	0.0	4.3	18.4%
Turkmenistan	44.5	0.9	0.6	0.6	46.5	97.5%	26.4	2.8	0.6	0.0	29.8	88.5%
Ukraine	687.9	34.5	32.6	12.0	767.0	94.2%	58.4	54.1	9.5	0.2	122.3	47.8%
Uzbekistan	119.8	1.8	3.6	1.7	126.8	95.9%	17.1	13.2	2.6	0.0	32.9	52.0%
Non-OECD Europe and Eurasia	3 985.9	128.6	168.6	446.7	4 729.8	87.0%	603.7	301.6	94.7	22.6	1 022.7	59.0%
Algeria	52.7	12.1	3.0	0.2	68.1	95.2%	24.4	3.7	3.1	0.0	31.2	78.2%
Angola	4.0	6.9	0.1	7.4	18.4	59.0%	6.8	14.0	1.1	0.1	22.1	31.0%
Benin	0.3	0.0	0.1	37.9	38.3	0.7%	0.7	1.9	0.5	2.0	5.1	13.9%
Botswana	2.9	-	-	0.4	3.3	87.6%	0.4	5.5	0.2	0.1	6.1	6.1%
Cameroon	2.7	3.7	0.3	63.4	70.1	9.1%	3.3	7.7	1.6	3.4	16.0	20.7%
Congo	0.6	1.5	0.0	49.8	51.9	4.1%	1.8	2.4	0.3	2.7	7.2	25.3%
Dem. Rep. of Congo	3.0	0.0	0.3	1 188.1	1 191.4	0.2%	3.6	26.8	4.0	63.9	98.3	3.7%
Côte d'Ivoire	2.6	0.0	0.2	129.5	132.4	2.0%	1.6	2.1	1.5	6.9	12.1	13.5%
Egypt	78.4	3.7	6.8	1.1	90.0	91.2%	10.4	10.5	6.0	0.0	26.9	38.7%
Eritrea	-	-	0.0	0.0	0.0	0.0%	0.3	1.5	0.3	-	2.1	15.0%
Ethiopia	2.2	-	0.2	0.4	2.8	79.5%	3.2	32.6	4.2	-	40.0	8.1%
Gabon	0.9	3.4	0.1	4.1	8.5	51.0%	3.0	0.1	0.2	0.2	3.5	86.2%
Ghana	2.7	-	0.3	12.7	15.7	17.2%	1.8	3.7	1.7	0.7	7.9	22.5%
Kenya	5.5	-	0.9	2.1	8.5	65.0%	4.9	13.4	2.1	-	20.3	23.9%
Libya	27.4	14.1	1.5	0.1	43.1	96.2%	14.8	1.1	0.8	0.0	16.7	88.7%
Morocco	19.6	-	2.5	0.3	22.4	87.6%	1.0	5.4	2.9	-	9.2	10.4%
Mozambique	1.1	-	0.0	17.4	18.5	5.8%	1.7	7.7	1.5	0.9	11.8	14.6%
Namibia	-	-	0.0	0.0	0.0	0.0%	0.1	3.3	0.1	-	3.6	2.2%
Nigeria	29.2	38.6	1.4	9.4	78.6	86.2%	33.8	22.0	8.8	0.4	65.1	51.9%
Senegal	2.1	-	0.2	0.1	2.4	88.6%	1.0	3.7	1.0	-	5.6	17.4%
South Africa	253.7	14.4	4.9	2.6	275.6	97.2%	23.6	19.1	8.4	2.2	53.4	44.3%
Sudan	5.5	-	0.1	4.0	9.6	57.2%	5.1	39.1	2.9	-	47.1	10.9%
United Rep. of Tanzania	1.7	-	0.3	44.9	46.9	3.6%	2.4	19.8	2.3	2.4	26.9	8.9%
Togo	0.6	-	0.2	7.4	8.1	7.0%	0.8	1.5	0.4	0.4	3.1	24.9%
Tunisia	12.1	0.0	2.5	0.1	14.7	82.2%	1.2	1.8	1.0	0.0	4.1	30.5%
Zambia	2.6	-	0.4	142.6	145.5	1.8%	1.7	19.2	0.8	7.5	29.1	5.7%
Zimbabwe	16.0	-	0.5	0.8	17.3	92.5%	1.2	8.1	0.9	0.0	10.3	11.4%
Other Africa	14.4	-	0.5	268.1	283.0	5.1%	14.9	104.9	11.2	13.2	144.3	10.4%
Africa	544.5	98.4	27.4	1 995.1	2 665.4	24.1%	169.7	382.6	69.8	107.0	729.1	23.3%

* Please refer to Part I, Chapter 4, Geographical Coverage.

 ** For 2010, Serbia includes Kosovo and Montenegro for all emissions other than CO₂ from fuel combustion.

1990 Greenhouse-gas emissions

million tonnes of CO₂ equivalent using GWP-100

Energy	N ₂ O					Share of energy	HFCs	PFCs	SF ₆	Total			GHG / GDP PPP *
	Industrial processes	Agriculture	Other	Total	Industrial processes		Total	Share of energy					
105.6	62.2	1 299.4	400.4	1 867.6	5.7%	15.9	46.5	29.8	22 374.1	50.0%	1.85	Non-OECD Total	
0.0	-	1.1	0.2	1.3	3.0%	-	-	-	11.1	64.2%	0.86	Albania	
0.0	-	0.6	0.2	0.8	4.6%	-	-	-	25.2	86.5%	2.42	Armenia	
0.1	-	2.1	0.4	2.7	3.3%	-	0.2	-	70.2	86.8%	2.06	Azerbaijan	
0.9	2.1	12.5	0.9	16.4	5.2%	-	0.0	-	205.3	61.6%	3.13	Belarus	
0.9	-	0.9	0.2	2.0	43.8%	-	0.6	-	31.5	86.7%	6.24	Bosnia-Herzegovina	
0.6	2.3	5.7	0.8	9.4	6.6%	-	0.0	-	105.5	73.9%	1.61	Bulgaria	
0.4	0.9	2.2	0.3	3.8	9.7%	-	0.9	-	32.0	74.0%	0.50	Croatia	
0.0	-	0.2	0.0	0.2	6.6%	-	-	-	5.0	77.2%	0.48	Cyprus	
0.1	0.8	1.6	0.3	2.8	3.4%	-	-	-	41.8	84.0%	1.42	Georgia	
0.0	-	-	0.0	0.0	21.3%	-	-	-	0.2	95.4%	0.32	Gibraltar	
3.6	-	18.3	11.6	33.5	10.7%	-	-	-	368.2	76.0%	3.18	Kazakhstan	
..	..	..	..	..	..	..	..	..	..	..	..	Kosovo
0.8	-	2.2	0.6	3.6	21.4%	-	-	-	33.2	72.0%	3.00	Kyrgyzstan	
0.2	-	2.5	0.3	3.0	7.3%	0.0	0.0	-	33.3	61.6%	1.24	Latvia	
0.3	0.8	3.9	0.4	5.3	5.6%	0.0	0.0	-	53.9	65.0%	1.17	Lithuania	
0.1	-	0.6	0.1	0.9	14.6%	-	-	-	11.4	78.3%	0.70	FYR of Macedonia	
0.0	-	0.0	0.0	0.1	12.0%	-	-	-	2.6	90.0%	0.53	Malta	
0.1	-	1.4	0.3	1.7	4.9%	-	-	-	37.5	84.6%	2.21	Republic of Moldova	
..	..	..	..	..	..	..	..	..	..	..	..	Montenegro
0.9	4.1	13.4	1.5	19.8	4.3%	-	2.0	0.0	238.1	78.5%	1.31	Romania	
15.0	15.2	84.9	35.9	150.9	9.9%	5.0	15.9	4.9	3 516.6	76.8%	1.88	Russian Federation	
0.4	0.7	3.3	0.6	4.9	8.8%	0.0	0.8	-	82.1	81.1%	0.77	Serbia	
0.0	-	1.2	0.2	1.4	2.3%	-	2.8	-	20.0	58.6%	1.27	Tajikistan	
0.1	0.1	1.8	0.2	2.2	3.5%	-	-	-	78.6	91.5%	3.50	Turkmenistan	
3.6	13.0	32.6	4.7	53.9	6.7%	0.0	0.2	-	943.4	83.1%	2.25	Ukraine	
0.2	0.2	7.8	1.0	9.2	2.0%	-	-	-	169.0	82.2%	4.12	Uzbekistan	
28.3	40.1	200.7	60.7	329.8	8.6%	5.0	23.4	4.9	6 115.6	77.6%	1.91	Non-OECD Europe and Eurasia	
0.3	0.4	2.5	0.7	3.9	7.9%	-	-	0.3	103.5	86.5%	0.66	Algeria	
0.1	-	15.7	2.0	17.7	0.7%	-	-	-	58.2	30.6%	1.82	Angola	
0.1	-	1.8	1.8	3.7	2.5%	-	-	-	47.2	2.2%	8.85	Benin	
0.0	-	4.9	0.5	5.4	0.6%	-	-	-	14.8	22.5%	1.54	Botswana	
0.2	-	7.0	3.3	10.5	1.5%	-	0.9	-	97.4	10.1%	3.84	Cameroon	
0.0	-	2.1	2.3	4.4	0.9%	-	-	-	63.5	6.3%	7.47	Congo	
0.7	-	31.4	55.1	87.2	0.8%	-	-	-	1 376.9	0.5%	59.94	Dem. Rep. of Congo	
0.2	-	1.7	5.8	7.6	2.3%	-	-	-	152.2	2.9%	6.36	Côte d'Ivoire	
0.5	1.4	8.4	1.6	11.9	4.2%	-	1.3	0.8	130.9	71.1%	0.71	Egypt	
0.0	-	1.0	0.0	1.0	3.0%	-	-	-	3.1	10.9%	..	Eritrea	
0.7	-	23.1	1.5	25.3	2.6%	-	-	-	68.0	9.0%	2.58	Ethiopia	
0.0	-	0.1	0.2	0.3	8.7%	-	-	-	12.3	59.9%	0.88	Gabon	
0.3	-	3.8	1.1	5.1	5.0%	-	0.6	-	29.4	16.2%	2.19	Ghana	
0.4	-	8.5	0.4	9.3	4.5%	-	-	-	38.1	28.3%	1.14	Kenya	
0.1	-	0.8	0.3	1.2	11.6%	-	-	0.3	61.3	92.1%	0.94	Libya	
0.2	-	4.4	0.6	5.2	3.5%	-	-	-	36.8	56.5%	0.55	Morocco	
0.3	-	8.5	1.8	10.6	2.4%	-	-	-	40.9	7.5%	7.64	Mozambique	
0.1	-	2.4	0.1	2.5	2.1%	-	-	-	6.1	2.2%	..	Namibia	
1.2	-	15.5	2.3	19.0	6.1%	-	-	0.2	163.0	63.0%	1.18	Nigeria	
0.1	-	2.6	0.3	2.9	3.5%	-	-	-	11.0	29.2%	1.02	Senegal	
2.0	1.0	13.5	5.1	21.5	9.2%	0.0	0.4	1.1	352.0	83.4%	1.25	South Africa	
0.4	-	32.7	2.9	36.0	1.1%	-	-	-	92.8	11.9%	3.63	Sudan	
0.4	-	17.3	3.5	21.1	1.7%	-	-	-	95.0	4.7%	4.46	United Rep. of Tanzania	
0.1	-	1.6	0.5	2.2	3.8%	-	-	-	13.4	10.6%	3.79	Togo	
0.1	0.4	1.2	0.2	2.0	7.0%	-	-	-	20.8	64.9%	0.57	Tunisia	
0.2	0.5	25.8	8.6	35.0	0.5%	-	-	-	209.7	2.1%	21.37	Zambia	
0.2	-	6.0	0.5	6.8	3.6%	-	-	-	34.3	50.7%	7.15	Zimbabwe	
1.9	-	86.3	19.0	107.2	1.8%	-	-	-	534.6	5.9%	4.86	Other Africa	
10.7	3.7	330.3	122.0	466.7	2.3%	0.0	3.2	2.7	3 867.0	21.3%	2.90	Africa	

* GHG / GDP PPP ratio is expressed in kg of CO₂-equivalent per 2005 USD. The high GHG / GDP PPP ratio for DR of Congo and Zambia is due to high levels of forest fires and subsequent post-burn decay.

1990 Greenhouse-gas emissions

 million tonnes of CO₂ equivalent using GWP-100

	CO ₂						CH ₄					
	Fuel comb.	Fugitive	Industrial processes	Other	Total	Share of energy	Energy	Agricult.	Waste	Other	Total	Share of energy
Bangladesh	13.6	-	0.2	10.4	24.1	56.2%	5.8	69.4	11.6	0.4	87.1	6.6%
Brunei Darussalam	3.2	0.0	0.0	10.7	14.1	23.3%	3.0	0.0	0.1	0.5	3.6	83.5%
Cambodia	-	-	-	0.0	0.0	0.0%	1.0	13.2	0.8	-	15.1	6.9%
Chinese Taipei	114.4	1.2	8.8	0.8	125.2	92.3%	1.0	1.4	3.9	0.0	6.3	16.2%
India	582.3	14.0	23.5	52.0	671.8	88.8%	67.2	366.9	77.0	2.5	513.6	13.1%
Indonesia	146.1	10.2	7.8	694.2	858.3	18.2%	37.4	82.0	26.2	6.6	152.2	24.6%
DPR of Korea	114.0	2.0	8.1	3.1	127.2	91.2%	12.4	5.6	2.7	1.0	21.6	57.1%
Malaysia	49.6	1.5	2.8	106.7	160.6	31.9%	9.1	6.9	3.0	4.6	23.6	38.4%
Mongolia	12.7	-	0.3	30.5	43.5	29.1%	0.6	6.4	0.2	1.1	8.3	7.7%
Myanmar	4.1	0.0	0.2	742.9	747.1	0.5%	3.1	39.0	4.5	37.4	84.0	3.7%
Nepal	0.9	-	0.1	0.2	1.2	75.1%	1.3	17.3	1.7	0.0	20.3	6.4%
Pakistan	58.6	0.6	3.6	0.4	63.2	93.7%	15.4	64.6	10.8	0.0	90.8	16.9%
Philippines	38.2	0.0	3.0	5.1	46.3	82.5%	3.7	28.6	9.0	0.2	41.6	8.9%
Singapore	29.4	0.2	0.9	0.3	30.8	96.1%	0.4	0.1	0.5	0.0	1.0	41.2%
Sri Lanka	3.7	-	0.3	1.0	5.0	74.2%	0.6	8.6	2.3	0.0	11.5	5.1%
Thailand	80.4	0.0	8.7	13.2	102.3	78.6%	14.5	61.3	8.6	0.5	85.0	17.1%
Vietnam	17.2	1.1	1.7	6.1	26.1	70.1%	6.6	46.8	7.0	0.0	60.5	10.9%
Other Asia	10.2	0.0	0.2	40.3	50.8	20.2%	2.3	15.9	3.3	1.6	23.1	9.9%
Asia	1 278.6	30.9	70.3	1 718.0	3 097.8	42.3%	185.4	833.9	173.3	56.6	1 249.1	14.8%
People's Rep. of China	2 244.9	26.4	170.2	83.4	2 524.9	90.0%	353.5	523.3	135.7	4.4	1 016.9	34.8%
Hong Kong, China	32.9	0.7	0.9	0.1	34.5	97.4%	0.1	-	1.4	-	1.5	6.0%
China	2 277.7	27.1	171.1	83.5	2 559.4	90.1%	353.6	523.3	137.2	4.4	1 018.5	34.7%
Argentina	99.9	3.2	1.8	17.3	122.2	84.3%	13.6	78.2	7.1	3.0	102.0	13.4%
Bolivia	5.2	0.8	0.2	149.1	155.3	3.8%	2.8	11.4	0.9	7.3	22.4	12.4%
Brazil	192.4	5.8	17.1	905.2	1 120.4	17.7%	25.0	209.5	41.4	43.7	319.6	7.8%
Colombia	46.2	1.4	3.9	52.0	103.6	46.0%	6.9	36.1	4.7	2.5	50.2	13.7%
Costa Rica	2.6	-	0.2	0.1	2.9	88.8%	0.2	3.2	0.4	-	3.8	4.5%
Cuba	33.8	0.9	1.8	4.5	41.0	84.7%	1.3	8.2	2.6	0.1	12.1	10.4%
Dominican Republic	7.4	-	0.5	0.6	8.5	87.0%	0.5	4.2	1.2	0.0	6.0	8.2%
Ecuador	12.8	1.7	0.8	1.0	16.3	89.1%	2.4	7.3	1.3	0.0	11.0	22.0%
El Salvador	2.2	-	0.3	0.3	2.8	80.2%	0.3	1.6	0.7	-	2.7	12.2%
Guatemala	3.2	0.0	0.5	3.8	7.5	42.8%	0.8	2.9	1.0	0.2	4.8	16.1%
Haiti	0.9	-	0.2	0.0	1.2	82.2%	0.7	1.7	0.9	-	3.3	22.2%
Honduras	2.2	-	0.1	5.0	7.3	29.5%	0.3	2.9	0.5	0.2	4.0	8.8%
Jamaica	7.2	-	0.3	0.1	7.5	95.4%	0.2	0.6	0.4	-	1.2	18.8%
Netherlands Antilles	2.8	-	-	0.0	2.8	98.3%	0.1	0.0	0.0	-	0.1	56.6%
Nicaragua	1.8	-	0.1	0.4	2.3	79.5%	0.3	3.8	0.7	-	4.8	5.9%
Panama	2.6	-	0.1	0.4	3.1	82.1%	0.1	2.3	0.4	-	2.8	4.7%
Paraguay	1.9	-	0.2	37.2	39.3	4.9%	0.8	12.0	0.7	2.0	15.5	5.3%
Peru	19.2	0.4	1.0	19.4	40.1	49.0%	1.7	7.9	3.0	0.9	13.6	12.4%
Trinidad and Tobago	11.4	0.5	0.2	0.0	12.2	97.8%	2.4	0.1	0.6	0.0	3.0	77.9%
Uruguay	3.8	0.0	0.2	0.4	4.4	85.2%	0.1	15.0	0.7	-	15.8	0.7%
Venezuela	105.1	1.9	2.8	39.8	149.6	71.5%	18.8	19.4	4.0	1.8	43.9	42.7%
Other Non-OECD Americas	12.4	0.0	1.0	22.1	35.5	35.0%	0.2	2.6	1.8	0.8	5.4	4.0%
Non-OECD Americas	576.9	16.7	33.4	1 259.0	1 885.9	31.5%	79.5	430.9	75.0	62.6	648.0	12.3%
Bahrain	11.7	0.0	0.1	0.1	11.9	98.6%	1.6	0.0	0.1	0.0	1.8	90.0%
Islamic Rep. of Iran	178.7	22.3	7.4	0.7	209.1	96.1%	31.1	17.7	7.9	0.0	56.7	54.8%
Iraq	53.4	13.1	6.1	3.1	75.7	87.8%	15.2	3.3	2.9	0.0	21.4	71.0%
Jordan	9.2	-	0.8	0.0	10.1	91.7%	0.1	0.3	0.4	-	0.9	13.7%
Kuwait	28.7	2.5	0.4	0.0	31.7	98.6%	4.7	0.1	0.6	0.0	5.3	88.4%
Lebanon	5.5	-	0.4	0.0	5.9	92.5%	0.1	0.2	0.4	-	0.7	11.7%
Oman	10.2	4.8	0.0	14.0	29.0	51.7%	5.6	0.3	0.2	-	6.2	91.0%
Qatar	14.3	2.0	0.1	0.0	16.4	98.9%	4.1	0.1	0.2	0.0	4.4	93.0%
Saudi Arabia	157.5	3.9	5.7	0.2	167.4	96.5%	24.7	1.8	3.0	0.1	29.7	83.3%
Syrian Arab Republic	28.2	4.1	1.4	0.1	33.8	95.5%	4.5	2.6	1.3	0.0	8.4	53.4%
United Arab Emirates	51.9	4.7	1.5	0.1	58.1	97.3%	12.7	0.3	0.4	-	13.4	95.0%
Yemen	6.4	0.0	0.5	0.0	7.0	92.4%	0.7	2.2	1.0	-	3.9	17.0%
Middle East	555.7	57.4	24.5	18.4	656.1	93.5%	105.0	28.8	18.7	0.1	152.6	68.8%

1990 Greenhouse-gas emissions

million tonnes of CO₂ equivalent using GWP-100

Energy	N ₂ O					Share of energy	HFCs	PFCs	SF ₆	Total			
	Industrial processes	Agriculture	Other	Total	Industrial processes		Total	Share of energy	GHG / GDP PPP *				
1.3	-	12.2	1.7	15.2	8.4%	-	-	-	126.4	16.3%	1.61	Bangladesh	
0.0	-	0.1	0.5	0.6	1.0%	-	-	-	18.2	34.5%	1.43	Brunei Darussalam	
0.2	-	3.3	0.4	3.9	5.4%	-	-	-	19.0	6.6%	..	Cambodia	
0.4	0.5	2.4	0.7	4.0	10.3%	0.0	0.1	1.9	137.6	85.0%	0.50	Chinese Taipei	
18.4	1.1	121.1	18.7	159.5	11.6%	1.7	2.1	5.8	1 354.5	50.3%	1.28	India	
3.7	0.1	54.9	30.2	88.9	4.2%	-	0.7	1.1	1 101.2	17.9%	2.97	Indonesia	
0.6	-	5.6	2.6	8.7	6.9%	0.0	-	-	157.6	81.9%	1.06	DPR of Korea	
0.3	-	8.2	5.1	13.6	1.9%	0.0	0.0	0.6	198.4	30.5%	1.59	Malaysia	
0.1	-	3.3	1.8	5.2	1.8%	-	-	-	56.9	23.5%	10.66	Mongolia	
0.4	-	8.4	35.4	44.2	0.9%	-	-	-	875.3	0.9%	65.00	Myanmar	
0.5	-	2.8	0.3	3.6	13.7%	-	-	-	25.1	10.7%	1.84	Nepal	
2.1	0.6	13.7	2.0	18.4	11.6%	-	-	1.0	173.5	44.2%	0.96	Pakistan	
1.0	-	7.1	1.6	9.7	9.9%	-	-	0.2	97.7	43.9%	0.62	Philippines	
0.1	-	0.1	0.3	0.4	16.8%	0.0	0.1	0.4	32.7	92.0%	0.42	Singapore	
0.2	-	1.2	0.3	1.8	14.0%	-	-	-	18.3	25.0%	0.53	Sri Lanka	
2.8	-	14.4	2.3	19.5	14.6%	-	-	1.4	208.2	47.0%	0.93	Thailand	
0.9	-	9.5	1.2	11.6	7.4%	-	-	-	98.2	26.2%	1.64	Vietnam	
0.4	-	10.3	2.3	13.0	3.2%	-	-	-	86.9	14.9%	2.14	Other Asia	
33.4	2.4	278.5	107.3	421.6	7.9%	1.7	3.0	12.3	4 785.6	31.9%	1.66	Asia	
21.3	10.1	253.4	33.6	318.4	6.7%	6.0	4.7	1.7	3 872.6	68.3%	3.10	People's Rep. of China	
0.1	-	-	0.2	0.4	37.2%	-	-	0.4	36.8	91.9%	0.27	Hong Kong, China	
21.4	10.1	253.4	33.9	318.8	6.7%	6.0	4.7	2.1	3 909.4	68.5%	2.82	China	
0.9	0.1	32.4	5.1	38.5	2.4%	0.2	1.9	0.1	265.0	44.4%	1.09	Argentina	
0.1	-	7.5	7.0	14.6	0.6%	-	-	-	192.3	4.6%	9.40	Bolivia	
4.1	4.1	102.5	45.0	155.8	2.7%	1.9	5.0	1.5	1 604.2	14.2%	1.49	Brazil	
0.6	0.2	16.3	3.1	20.2	3.1%	-	0.0	0.0	174.1	31.7%	0.86	Colombia	
0.1	0.1	1.5	0.1	1.8	2.8%	-	-	-	8.5	33.1%	0.44	Costa Rica	
0.8	0.7	7.3	0.9	9.6	8.1%	-	-	-	62.7	58.7%	1.43	Cuba	
0.1	-	1.7	0.3	2.1	4.8%	-	-	-	16.6	48.0%	0.60	Dominican Republic	
0.2	-	2.7	0.3	3.2	4.9%	-	-	-	30.5	56.1%	0.55	Ecuador	
0.1	-	1.1	0.2	1.3	6.1%	-	-	-	6.8	39.0%	0.35	El Salvador	
0.2	-	1.9	0.4	2.5	7.2%	0.0	-	-	14.8	28.1%	0.50	Guatemala	
0.1	-	0.8	0.1	0.9	6.2%	-	-	-	5.4	32.3%	0.54	Haiti	
0.1	-	2.0	0.4	2.4	3.6%	-	-	-	13.7	18.9%	1.05	Honduras	
0.1	-	0.3	0.1	0.5	12.8%	-	-	-	9.2	80.9%	0.65	Jamaica	
0.0	-	0.0	0.1	0.1	9.9%	-	-	-	3.0	94.0%	1.95	Netherlands Antilles	
0.1	-	2.8	0.2	3.1	2.4%	-	-	-	10.2	21.5%	1.01	Nicaragua	
0.0	-	0.9	0.1	1.0	3.5%	-	-	-	6.9	39.4%	0.47	Panama	
0.1	-	6.6	2.3	9.0	1.6%	-	-	-	63.8	4.5%	3.67	Paraguay	
0.2	0.2	3.9	1.2	5.6	4.1%	-	-	-	59.2	36.4%	0.61	Peru	
0.0	-	0.1	0.1	0.2	10.9%	-	-	-	15.4	92.6%	1.17	Trinidad and Tobago	
0.1	-	5.9	0.1	6.1	1.5%	-	-	-	26.2	15.2%	1.16	Uruguay	
0.4	0.0	9.2	2.5	12.0	3.0%	1.0	1.9	0.3	208.8	60.4%	1.10	Venezuela	
0.1	-	2.5	1.0	3.6	2.6%	-	0.3	0.0	44.8	28.5%	1.58	Other Non-OECD Americas	
8.4	5.4	209.9	70.4	294.0	2.8%	3.1	9.1	2.0	2 842.2	24.0%	1.31	Non-OECD Americas	
0.0	-	0.0	0.0	0.1	19.5%	-	2.5	-	16.3	81.9%	1.85	Bahrain	
2.0	0.3	14.5	2.1	18.8	10.5%	-	0.2	2.4	287.2	81.5%	0.84	Islamic Rep. of Iran	
0.2	-	3.0	0.5	3.8	6.4%	-	-	0.3	101.2	81.0%	0.71	Iraq	
0.0	-	0.3	0.1	0.5	6.7%	-	-	-	11.4	82.3%	1.09	Jordan	
0.1	-	0.0	0.2	0.3	25.3%	0.0	-	0.3	37.5	95.9%	0.75	Kuwait	
0.0	-	0.2	0.1	0.4	8.8%	-	-	-	7.0	80.0%	0.41	Lebanon	
0.0	-	0.2	0.1	0.3	14.6%	-	-	-	35.5	58.1%	1.30	Oman	
0.0	-	0.0	0.1	0.1	20.9%	-	-	-	20.9	97.2%	1.07	Qatar	
0.6	-	3.1	1.8	5.5	10.0%	0.0	-	2.4	205.0	91.1%	0.66	Saudi Arabia	
0.2	0.2	3.2	0.5	4.1	5.1%	-	-	-	46.3	79.9%	1.26	Syrian Arab Republic	
0.1	-	0.2	0.4	0.7	18.5%	-	0.4	0.5	73.1	95.0%	0.55	United Arab Emirates	
0.1	-	1.8	0.2	2.1	2.8%	-	-	-	13.0	55.3%	0.60	Yemen	
3.4	0.5	26.6	6.1	36.7	9.2%	0.0	3.1	5.8	854.3	84.5%	0.76	Middle East	

* GHG / GDP PPP ratio is expressed in kg of CO₂-equivalent per 2005 USD. The high GHG / GDP PPP ratio for Mongolia is due to high levels of peat decay.

2000 Greenhouse-gas emissions

 million tonnes of CO₂ equivalent using GWP-100

	CO ₂						CH ₄					
	Fuel comb.	Fugitive	Industrial processes	Other	Total	Share of energy	Energy	Agricult.	Waste	Other	Total	Share of energy
World *	23 758.6	427.2	1 003.2	5 300.8	30 489.9	79.3%	2 137.7	3 007.8	1 144.1	176.0	6 465.6	33.1%
<i>Annex I Parties</i>	13 744.5	169.0	379.2	836.5	15 129.2	92.0%	913.4	685.9	456.9	37.0	2 093.2	43.6%
<i>Annex II Parties</i>	10 996.5	59.7	273.0	351.5	11 680.6	94.7%	432.8	536.1	334.4	15.1	1 318.5	32.8%
<i>North America</i>	6 227.7	26.6	81.6	106.4	6 442.3	97.1%	279.1	208.5	160.0	6.5	654.1	42.7%
<i>Europe</i>	3 223.3	25.4	125.6	168.0	3 542.3	91.7%	116.8	193.7	150.3	1.8	462.6	25.2%
<i>Asia Oceania</i>	1 545.5	7.6	65.8	77.1	1 696.0	91.6%	36.9	133.9	24.1	6.8	201.8	18.3%
<i>Annex I EIT</i>	2 545.3	106.8	89.1	483.9	3 225.1	82.2%	471.2	127.3	97.8	21.9	718.2	65.6%
<i>Non-Annex I Parties</i>	9 177.7	258.2	624.0	4 464.3	14 524.2	65.0%	1 223.3	2 321.9	687.2	139.0	4 371.4	28.0%
<i>Annex I Kyoto Parties</i>	7 784.9	143.9	289.5	712.2	8 930.6	88.8%	670.7	469.9	296.5	32.5	1 469.6	45.6%
Int. marine bunkers	486.0	-	-	-	486.0	100.0%	0.9	-	-	-	0.9	100%
Int. aviation bunkers	350.4	-	-	-	350.4	100.0%	0.1	-	-	-	0.1	100%
Non-OECD Total	10 297.1	351.5	644.5	4 863.9	16 156.9	65.9%	1 595.4	2 349.8	728.8	159.3	4 833.2	33.0%
OECD Total	12 625.1	75.7	358.7	436.9	13 496.5	94.1%	541.3	658.0	415.3	16.7	1 631.4	33.2%
Canada	529.5	4.0	10.4	26.3	570.3	93.6%	46.8	23.3	28.3	2.0	100.4	46.6%
Chile	52.5	1.0	2.2	0.3	56.1	95.5%	4.3	6.9	5.6	0.1	16.9	25.1%
Mexico	349.6	5.4	18.6	42.7	416.4	85.3%	29.3	53.5	18.7	1.2	102.7	28.5%
United States	5 698.1	22.6	71.2	80.1	5 872.0	97.4%	232.4	185.2	131.7	4.4	553.7	42.0%
OECD Americas	6 629.8	33.1	102.5	149.5	6 914.8	96.4%	312.7	268.9	184.4	7.8	773.8	40.4%
Australia	338.8	3.2	6.2	42.5	390.7	87.5%	31.4	78.5	11.5	6.4	127.7	24.6%
Israel	55.2	-	3.2	0.2	58.7	94.1%	0.1	1.0	1.5	0.0	2.7	5.0%
Japan	1 175.8	4.4	59.1	29.7	1 269.0	93.0%	4.5	31.8	10.8	0.4	47.5	9.4%
Korea	437.7	1.9	25.5	0.5	465.6	94.4%	5.9	12.5	12.4	0.1	30.9	19.1%
New Zealand	30.9	0.0	0.5	4.9	36.3	85.1%	1.1	23.5	1.9	0.1	26.6	4.0%
OECD Asia Oceania	2 038.4	9.6	94.6	77.8	2 220.3	92.2%	43.0	147.5	38.0	6.9	235.4	18.3%
Austria	61.7	0.4	3.7	0.5	66.2	93.7%	1.9	4.4	2.6	0.0	9.0	21.7%
Belgium	118.6	0.2	5.2	0.6	124.6	95.3%	1.6	6.5	2.9	0.0	11.0	14.7%
Czech Republic	121.9	4.0	4.1	1.2	131.1	96.0%	5.7	4.3	2.9	0.1	12.9	43.8%
Denmark	50.8	0.4	1.6	3.3	56.1	91.3%	1.1	5.4	1.7	-	8.1	13.0%
Estonia	14.6	-	0.4	11.4	26.5	55.3%	0.8	0.6	0.7	-	2.1	38.3%
Finland	55.4	0.5	1.1	52.2	109.1	51.2%	0.8	2.1	7.4	0.0	10.3	7.4%
France	378.7	1.7	20.6	7.6	408.5	93.1%	34.2	38.3	13.0	0.1	85.6	39.9%
Germany	825.0	5.1	23.1	36.6	889.9	93.3%	21.2	31.8	23.0	0.2	76.1	27.8%
Greece	87.4	0.0	7.1	0.5	95.0	92.0%	1.9	3.7	2.5	0.1	8.1	23.3%
Hungary	54.2	0.5	1.9	1.0	57.6	94.9%	2.4	3.0	2.8	0.0	8.2	28.9%
Iceland	2.1	-	0.1	17.6	19.8	10.8%	0.0	0.2	0.1	0.0	0.3	1.7%
Ireland	41.1	-	1.7	9.5	52.3	78.5%	1.3	11.8	1.8	0.0	14.9	8.6%
Italy	426.0	4.2	22.1	2.4	454.7	94.6%	7.5	18.3	20.7	0.2	46.7	16.1%
Luxembourg	8.0	-	0.6	0.0	8.6	92.6%	0.1	0.8	0.1	0.0	1.0	10.2%
Netherlands	172.1	0.6	1.3	7.4	181.4	95.2%	4.9	10.1	9.1	0.1	24.3	20.2%
Norway	33.6	1.7	1.0	0.9	37.1	95.0%	11.6	2.2	3.3	0.1	17.2	67.4%
Poland	290.9	0.2	9.0	26.3	326.4	89.2%	48.7	14.7	9.3	0.1	72.8	66.9%
Portugal	59.4	0.2	4.2	0.3	64.1	93.0%	0.9	4.4	6.6	0.5	12.3	7.4%
Slovak Republic	37.4	0.4	2.1	0.4	40.3	93.8%	0.9	1.8	1.7	0.0	4.4	21.1%
Slovenia	14.1	-	1.5	0.3	15.8	89.1%	1.1	1.1	0.7	0.0	2.9	37.3%
Spain	283.9	2.1	18.2	1.6	305.8	93.5%	4.3	20.0	10.4	0.5	35.1	12.2%
Sweden	52.8	1.5	2.0	14.7	70.9	76.5%	1.2	3.3	6.9	0.0	11.5	10.6%
Switzerland	42.5	0.0	1.7	0.5	44.8	94.9%	0.9	3.2	1.0	0.0	5.1	17.8%
Turkey	200.6	2.5	17.1	1.2	221.4	91.7%	9.3	22.4	24.5	0.0	56.3	16.6%
United Kingdom	524.3	6.8	10.3	11.8	553.2	96.0%	21.5	27.2	37.2	0.1	85.9	25.0%
OECD Europe	3 956.9	33.1	161.7	209.7	4 361.4	91.5%	185.7	241.7	192.9	2.0	622.2	29.8%
<i>European Union - 27</i>	3 833.8	30.8	150.5	202.0	4 217.0	91.6%	180.6	227.4	180.5	2.4	590.9	30.6%

* Total World includes Non-OECD total, OECD total as well as international bunkers.

 Sources: IEA, Sectoral Approach for CO₂ emissions from fuel combustion. EDGAR 4.2 FT2010 database for other emissions. In general, estimates for emissions other than CO₂ from fuel combustion are subject to significantly larger uncertainties.

2000 Greenhouse-gas emissions

million tonnes of CO₂ equivalent using GWP-100

Energy	N ₂ O					Share of energy	HFCs	PFCs	SF ₆	Total			GHG / GDP PPP *	
	Industrial processes	Agriculture	Other	Total			Industrial processes			Total	Share of energy			
295.1	183.1	1 802.2	495.3	2 775.8	10.6%	293.1	100.7	117.1	40 242.1	66.1%	0.84	World		
156.8	131.5	541.5	166.6	996.4	15.7%	227.7	73.8	84.6	18 604.9	80.5%	0.60	Annex I Parties		
132.8	91.6	424.4	112.4	761.3	17.4%	207.4	46.2	74.2	14 088.2	82.5%	0.51	Annex II Parties		
91.4	31.3	191.5	53.4	367.6	24.9%	118.9	21.8	50.9	7 655.7	86.5%	0.63	North America		
27.9	54.2	156.8	35.7	274.7	10.2%	51.5	13.8	15.6	4 360.4	77.8%	0.39	Europe		
13.6	6.2	76.0	23.3	119.1	11.4%	37.0	10.6	7.7	2 072.1	77.4%	0.48	Asia Oceania		
20.0	35.6	95.5	50.9	201.9	9.9%	19.3	27.0	9.4	4 201.0	74.8%	1.55	Annex I EIT		
112.6	51.7	1 260.8	328.7	1 753.7	6.4%	65.4	26.9	32.5	20 774.2	51.9%	1.22	Non-Annex I Parties		
69.3	98.0	342.8	115.6	625.7	11.1%	113.9	58.5	37.7	11 236.0	77.2%	0.58	Annex I Kyoto Parties		
20.3	-	-	-	20.3	100%	-	-	-	507.3	100.0%	..	Int. marine bunkers		
5.4	-	-	-	5.4	100%	-	-	-	355.8	100.0%	..	Int. aviation bunkers		
116.0	69.7	1 286.1	363.4	1 835.2	6.3%	70.6	50.0	35.8	22 981.7	53.8%	1.39	Non-OECD Total		
153.3	113.4	516.2	132.0	914.9	16.8%	222.5	50.7	81.3	16 397.3	81.7%	0.52	OECD Total		
8.3	3.8	22.5	6.3	40.9	20.3%	6.2	7.1	4.9	729.8	80.6%	0.73	Canada		
0.8	0.7	5.3	0.8	7.6	10.1%	-	0.0	0.0	80.6	72.6%	0.49	Chile		
2.8	1.2	32.5	6.7	43.2	6.5%	3.3	0.6	0.8	567.0	68.3%	0.48	Mexico		
83.1	27.5	169.0	47.1	326.7	25.4%	112.7	14.7	45.9	6 925.8	87.2%	0.62	United States		
94.9	33.3	229.3	60.9	418.4	22.7%	122.2	22.4	51.7	8 303.3	85.2%	0.62	OECD Americas		
4.0	1.7	56.6	13.3	75.6	5.3%	2.5	1.2	0.5	598.2	63.1%	0.99	Australia		
0.3	0.2	0.9	0.6	1.9	13.6%	0.7	0.1	1.0	65.1	85.4%	0.45	Israel		
9.2	4.4	8.7	9.7	32.0	28.7%	34.1	9.0	7.2	1 398.8	85.4%	0.38	Japan		
3.1	6.8	4.7	3.3	18.0	17.2%	8.4	2.2	4.1	529.1	84.8%	0.60	Korea		
0.4	-	10.8	0.3	11.5	3.4%	0.3	0.4	0.1	75.2	43.1%	0.87	New Zealand		
16.9	13.2	81.7	27.2	138.9	12.2%	46.1	12.8	12.7	2 666.3	79.1%	0.50	OECD Asia Oceania		
0.6	0.8	2.5	0.8	4.8	13.3%	1.0	0.1	0.3	81.4	79.4%	0.32	Austria		
0.8	4.8	3.1	1.1	9.8	8.0%	1.0	0.0	0.1	146.7	82.6%	0.47	Belgium		
5.0	1.2	3.2	1.0	10.5	47.7%	0.4	0.0	0.0	155.0	88.1%	0.87	Czech Republic		
0.6	1.0	4.9	0.6	7.1	8.1%	0.7	0.0	0.1	72.0	73.3%	0.43	Denmark		
0.2	-	0.6	0.1	0.8	20.0%	0.0	0.0	0.0	29.4	53.0%	1.87	Estonia		
1.6	1.3	3.2	0.6	6.7	24.6%	0.4	0.0	0.1	126.7	46.0%	0.90	Finland		
4.0	10.0	33.6	4.6	52.1	7.6%	9.4	1.1	2.4	559.2	74.8%	0.33	France		
6.5	9.6	30.5	5.8	52.5	12.4%	11.3	1.7	5.6	1 037.0	82.7%	0.42	Germany		
1.0	0.8	3.7	1.1	6.6	14.6%	2.4	0.3	0.1	112.5	80.2%	0.51	Greece		
0.3	1.8	4.0	0.7	6.9	5.0%	0.4	0.3	0.0	73.5	78.1%	0.53	Hungary		
0.0	-	0.3	0.0	0.4	9.8%	0.0	0.1	0.0	20.7	10.6%	2.47	Iceland		
0.3	0.7	7.0	0.4	8.4	3.9%	0.4	0.4	0.1	76.5	55.8%	0.61	Ireland		
2.8	8.1	14.1	5.6	30.6	9.2%	7.1	0.4	1.3	540.8	81.5%	0.34	Italy		
0.1	-	0.3	0.1	0.4	19.1%	0.1	0.0	-	10.1	80.8%	0.38	Luxembourg		
0.9	5.7	6.2	1.3	14.2	6.2%	6.2	1.0	0.3	227.3	78.5%	0.42	Netherlands		
0.4	1.8	1.8	0.7	4.8	7.7%	0.2	4.6	1.0	64.8	72.9%	0.33	Norway		
3.5	4.4	17.0	2.5	27.4	12.8%	0.7	0.5	0.2	427.9	80.2%	0.95	Poland		
0.8	0.5	2.8	1.7	5.8	14.0%	0.4	0.0	0.1	82.7	74.2%	0.38	Portugal		
0.5	1.1	1.2	0.3	3.1	15.8%	0.1	0.1	-	48.1	81.6%	0.70	Slovak Republic		
0.2	-	0.8	0.2	1.2	14.3%	0.1	0.2	0.0	20.2	76.0%	0.51	Slovenia		
2.6	2.5	17.4	4.9	27.4	9.4%	3.3	2.3	2.5	376.3	77.8%	0.37	Spain		
1.1	0.7	3.8	0.8	6.5	17.7%	0.6	0.7	0.2	90.3	62.7%	0.35	Sweden		
0.5	0.2	1.4	0.5	2.6	18.9%	0.8	0.1	0.3	53.7	81.8%	0.21	Switzerland		
3.9	4.3	21.6	3.3	33.0	11.9%	1.0	0.6	1.0	313.2	69.1%	0.50	Turkey		
3.3	5.6	20.2	5.0	34.1	9.6%	6.3	0.9	1.2	681.6	81.6%	0.40	United Kingdom		
41.5	67.0	205.2	43.9	357.5	11.6%	54.2	15.5	16.8	5 427.6	77.7%	0.43	OECD Europe		
38.0	66.2	191.2	42.2	337.7	11.2%	52.9	10.8	14.6	5 223.9	78.2%	0.44	European Union - 27		

* GHG / GDP PPP ratio is expressed in kg of CO₂-equivalent per 2005 USD.

2000 Greenhouse-gas emissions

 million tonnes of CO₂ equivalent using GWP-100

	CO ₂						CH ₄					
	Fuel comb.	Fugitive	Industrial processes	Other	Total	Share of energy	Energy	Agricult.	Waste	Other	Total	Share of energy
Non-OECD Total	10 297.1	351.5	644.5	4 863.9	16 156.9	65.9%	1 595.4	2 349.8	728.8	159.3	4 833.2	33.0%
Albania	3.1	0.0	0.0	0.6	3.7	82.2%	0.4	1.8	0.2	0.2	2.6	14.7%
Armenia	3.4	-	0.1	0.3	3.8	88.8%	1.3	0.9	0.4	0.0	2.6	50.9%
Azerbaijan	27.9	0.3	0.1	0.2	28.5	98.8%	4.3	4.1	1.5	0.0	10.0	43.5%
Belarus	58.7	0.0	1.4	43.0	103.2	56.9%	0.9	8.4	4.0	0.0	13.3	7.0%
Bosnia-Herzegovina	13.5	-	0.2	0.4	14.1	96.1%	0.9	1.0	0.3	0.5	2.7	35.3%
Bulgaria	42.1	0.9	2.7	0.3	46.1	93.3%	1.3	2.4	9.8	0.3	13.8	9.3%
Croatia	17.7	0.0	1.5	0.0	19.2	92.1%	1.9	1.1	0.9	0.0	3.9	47.2%
Cyprus *	6.3	-	0.6	0.0	6.9	91.5%	0.0	0.3	0.3	-	0.6	3.8%
Georgia	4.6	0.0	0.2	0.3	5.1	90.9%	1.4	2.1	0.6	0.0	4.1	33.3%
Gibraltar	0.4	-	-	0.0	0.4	99.9%	0.0	-	0.0	-	0.0	11.9%
Kazakhstan	113.0	13.5	2.1	0.6	129.2	97.9%	23.3	9.4	3.8	2.1	38.6	60.3%
Kosovo **	5.0	..	..	..	..	..	..	..	..	..	..	..
Kyrgyzstan	4.4	0.0	0.2	0.5	5.1	85.7%	0.3	2.5	0.7	0.0	3.5	7.3%
Latvia	6.8	-	0.2	4.6	11.7	58.5%	1.4	0.8	0.6	0.0	2.8	49.1%
Lithuania	11.2	0.0	0.3	6.0	17.6	63.9%	1.8	1.9	1.3	0.0	5.0	36.3%
FYR of Macedonia	8.4	-	0.2	0.1	8.7	96.3%	0.5	0.7	0.3	0.0	1.5	30.5%
Malta	2.1	-	0.0	0.0	2.1	99.5%	0.0	0.1	0.2	-	0.2	1.0%
Republic of Moldova	6.5	-	0.1	0.1	6.8	96.2%	1.7	1.1	0.4	0.0	3.3	51.3%
Montenegro **	..	..	..	..	..	..	..	..	..	..	..	..
Romania	87.0	1.1	4.9	1.5	94.4	93.3%	12.2	8.4	4.4	0.1	25.1	48.6%
Russian Federation	1 496.7	68.0	43.6	380.0	1 988.3	78.7%	337.3	58.1	49.2	21.0	465.5	72.5%
Serbia **	42.5	0.0	1.2	0.7	44.4	95.8%	3.3	4.0	1.2	0.2	8.7	37.8%
Tajikistan	2.2	-	0.0	0.1	2.3	96.4%	0.5	2.1	0.7	0.0	3.3	13.7%
Turkmenistan	36.6	2.0	0.2	0.4	39.2	98.3%	16.3	4.2	0.8	0.0	21.2	76.6%
Ukraine	292.0	31.6	15.6	7.8	347.0	93.3%	54.8	20.8	9.5	0.2	85.2	64.3%
Uzbekistan	118.0	2.3	1.8	1.6	123.6	97.3%	22.8	11.0	3.2	0.0	37.1	61.6%
Non-OECD Europe and Eurasia	2 410.1	119.7	77.3	449.2	3 056.2	82.8%	488.4	147.1	94.2	24.8	754.6	64.7%
Algeria	63.5	14.9	3.7	0.2	82.3	95.3%	35.4	4.2	4.1	0.0	43.8	80.9%
Angola	5.1	10.5	0.2	6.2	22.0	70.9%	10.2	3.9	1.5	0.1	15.8	65.0%
Benin	1.4	-	0.1	25.2	26.7	5.3%	0.8	2.1	0.8	0.8	4.5	18.1%
Botswana	4.2	-	0.1	0.4	4.7	88.5%	0.5	3.2	0.2	0.0	3.9	11.5%
Cameroon	2.8	2.1	0.4	56.2	61.4	8.0%	2.5	8.6	2.2	2.6	15.8	15.6%
Congo	0.5	3.6	0.0	43.1	47.2	8.6%	3.9	1.6	0.5	2.1	8.0	48.7%
Dem. Rep. of Congo	1.7	0.0	0.1	912.7	914.4	0.2%	5.4	14.5	5.3	38.5	63.7	8.5%
Côte d'Ivoire	6.1	0.2	0.3	138.2	144.8	4.3%	2.6	2.2	2.1	7.3	14.2	18.6%
Egypt	101.3	3.4	11.2	1.1	117.0	89.5%	15.1	13.3	7.5	0.0	35.8	42.0%
Eritrea	0.6	-	0.0	0.0	0.7	91.4%	0.3	2.0	0.4	-	2.7	12.3%
Ethiopia	3.2	-	0.4	0.5	4.2	77.6%	7.1	33.3	5.8	-	46.2	15.4%
Gabon	1.4	4.5	0.1	2.2	8.2	71.5%	3.7	0.1	0.3	0.0	4.1	89.9%
Ghana	5.1	-	0.8	8.6	14.6	35.1%	2.8	4.0	2.5	0.3	9.6	28.9%
Kenya	7.8	-	0.7	3.2	11.7	66.9%	6.5	12.5	3.3	-	22.3	29.0%
Libya	39.5	8.0	1.5	0.1	49.1	96.7%	11.1	0.8	1.0	0.0	13.0	85.6%
Morocco	29.4	-	3.5	0.3	33.3	88.5%	0.4	5.4	3.8	-	9.6	4.2%
Mozambique	1.3	-	0.1	41.5	43.0	3.1%	2.1	6.1	1.9	2.9	13.0	15.9%
Namibia	1.8	-	0.0	0.0	1.8	97.6%	0.1	4.3	0.2	-	4.6	2.3%
Nigeria	42.0	48.0	1.1	9.0	100.2	89.9%	44.8	24.9	12.5	0.4	82.6	54.3%
Senegal	3.6	-	0.4	0.1	4.1	87.3%	1.1	4.7	1.3	-	7.1	15.4%
South Africa	296.7	12.8	4.9	2.6	317.0	97.6%	27.2	18.9	11.1	2.2	59.4	45.8%
Sudan	5.9	0.0	0.1	4.1	10.1	58.6%	6.7	53.4	4.3	-	64.4	10.3%
United Rep. of Tanzania	2.6	-	0.4	47.6	50.5	5.1%	3.7	19.4	3.5	2.5	29.1	12.8%
Togo	1.0	-	0.3	6.1	7.3	13.0%	1.3	1.3	0.6	0.3	3.4	38.8%
Tunisia	18.0	0.4	2.8	0.1	21.4	86.1%	3.4	2.1	1.4	0.0	6.9	49.0%
Zambia	1.7	-	0.3	110.8	112.8	1.5%	2.2	10.5	1.0	4.4	18.1	12.1%
Zimbabwe	12.6	0.3	0.4	0.9	14.3	90.3%	1.2	7.1	1.3	0.0	9.7	12.8%
Other Africa	19.7	2.1	0.7	235.2	257.8	8.5%	20.2	99.1	15.1	9.3	143.7	14.1%
Africa	680.5	110.8	34.6	1 656.5	2 482.5	31.9%	222.3	363.4	95.7	73.6	755.1	29.4%

* Please refer to Part I, Chapter 4, Geographical Coverage.

 ** For 2010, Serbia includes Kosovo and Montenegro for all emissions other than CO₂ from fuel combustion.

2000 Greenhouse-gas emissions

million tonnes of CO₂ equivalent using GWP-100

Energy	N ₂ O					Share of energy	HFCs	PFCs	SF ₆	Total			GHG / GDP PPP *
	Industrial processes	Agriculture	Other	Total	Industrial processes		Total	Share of energy					
116.0	69.7	1 286.1	363.4	1 835.2	6.3%	70.6	50.0	35.8	22 981.7	53.8%	1.39	Non-OECD Total	
0.1	-	0.7	0.5	1.3	5.6%	0.0	-	-	7.6	46.1%	0.52	Albania	
0.0	-	0.4	0.1	0.5	1.1%	0.0	-	-	6.9	68.3%	0.98	Armenia	
0.1	-	1.6	0.4	2.0	3.9%	0.0	0.0	-	40.5	80.4%	2.02	Azerbaijan	
0.5	1.7	8.1	0.6	10.8	4.2%	0.1	0.0	-	127.4	47.2%	2.19	Belarus	
0.2	-	0.7	0.9	1.7	9.7%	0.1	0.3	-	18.9	77.4%	1.00	Bosnia-Herzegovina	
0.3	1.0	2.2	0.9	4.4	6.8%	0.1	0.0	-	64.4	69.2%	1.11	Bulgaria	
0.2	0.9	1.5	0.3	2.9	7.6%	0.0	0.1	-	26.1	75.7%	0.48	Croatia	
0.0	-	0.2	0.1	0.3	9.7%	0.1	-	-	7.8	81.4%	0.49	Cyprus	
0.1	0.6	1.1	0.2	2.0	3.4%	0.0	-	-	11.2	54.0%	1.01	Georgia	
0.0	-	-	0.0	0.0	28.9%	-	-	-	0.4	97.1%	0.54	Gibraltar	
1.9	-	9.8	4.2	16.0	12.0%	0.1	-	-	183.8	82.5%	2.28	Kazakhstan	
..	..	..	..	..	..	..	..	..	..	..	..	Kosovo
0.1	-	1.2	0.3	1.6	8.0%	0.0	-	-	10.2	47.0%	1.38	Kyrgyzstan	
0.1	-	0.9	0.2	1.2	11.5%	0.2	0.0	-	15.9	52.7%	0.78	Latvia	
0.1	1.3	2.0	0.2	3.7	3.0%	0.2	0.0	-	26.4	49.8%	0.79	Lithuania	
0.1	-	0.4	0.2	0.7	8.5%	0.1	-	-	10.9	81.7%	0.74	FYR of Macedonia	
0.0	-	0.0	0.0	0.1	10.3%	0.1	-	-	2.5	85.8%	0.30	Malta	
0.0	-	0.6	0.2	0.8	5.2%	0.0	-	-	10.8	76.0%	1.79	Republic of Moldova	
..	..	..	..	..	..	..	..	..	..	..	..	Montenegro
0.7	3.2	6.0	1.5	11.3	6.5%	0.1	0.7	0.0	131.7	76.7%	0.86	Romania	
7.3	10.2	36.1	39.6	93.2	7.8%	16.8	24.9	9.0	2 597.7	73.5%	2.06	Russian Federation	
0.4	0.5	2.5	0.7	4.2	10.7%	1.7	0.3	-	59.2	78.1%	1.12	Serbia	
0.0	-	0.9	0.2	1.1	1.0%	0.0	0.8	-	7.4	35.4%	1.25	Tajikistan	
0.1	0.5	2.1	0.2	2.9	2.1%	0.0	-	-	63.4	86.6%	3.59	Turkmenistan	
1.1	8.8	12.0	2.7	24.6	4.5%	0.1	0.2	0.2	457.3	83.0%	2.52	Ukraine	
0.6	0.1	7.5	1.0	9.2	6.7%	0.2	-	-	170.1	84.5%	4.23	Uzbekistan	
14.1	28.8	98.3	55.1	196.4	7.2%	19.8	27.4	9.2	4 063.6	74.6%	1.89	Non-OECD Europe and Eurasia	
0.4	0.6	2.7	0.8	4.5	8.3%	0.1	-	0.3	131.0	87.2%	0.71	Algeria	
0.2	-	2.5	0.3	3.0	6.1%	0.0	-	-	40.7	63.8%	1.18	Angola	
0.1	-	2.0	1.3	3.3	3.5%	-	-	-	34.6	6.8%	4.06	Benin	
0.1	-	2.3	0.2	2.5	2.9%	-	-	-	11.2	42.1%	0.67	Botswana	
0.2	-	7.5	3.0	10.7	2.1%	-	0.5	-	88.5	8.6%	3.05	Cameroon	
0.1	-	1.4	1.9	3.4	1.8%	0.0	-	-	58.7	13.7%	5.99	Congo	
1.1	-	16.6	40.7	58.5	2.0%	-	-	-	1 036.6	0.8%	80.29	Dem. Rep. of Congo	
0.2	-	2.0	6.2	8.5	2.5%	-	-	-	167.5	5.5%	5.58	Côte d'Ivoire	
0.6	3.3	12.2	2.1	18.2	3.4%	0.1	1.4	1.1	173.6	69.3%	0.62	Egypt	
0.0	-	1.3	0.1	1.4	3.3%	-	-	-	4.7	20.9%	2.23	Eritrea	
1.5	-	23.5	1.8	26.7	5.4%	0.0	-	-	77.0	15.3%	2.23	Ethiopia	
0.0	-	0.1	0.1	0.3	18.0%	0.0	-	-	12.5	76.4%	0.77	Gabon	
0.4	-	3.8	1.0	5.3	8.4%	0.0	0.1	-	29.6	28.2%	1.45	Ghana	
0.6	-	8.1	0.6	9.2	6.0%	-	-	-	43.2	34.3%	1.08	Kenya	
0.2	-	0.7	0.4	1.3	13.3%	-	-	0.2	63.6	92.5%	0.96	Libya	
0.4	-	4.5	0.7	5.6	7.2%	-	-	-	48.5	62.4%	0.57	Morocco	
0.3	-	6.6	2.7	9.6	3.2%	0.0	0.0	-	65.6	5.6%	7.20	Mozambique	
0.1	-	3.2	0.2	3.5	2.4%	-	-	-	9.9	19.7%	1.16	Namibia	
1.9	-	16.2	2.9	21.0	8.9%	0.1	-	0.2	204.0	67.0%	1.12	Nigeria	
0.1	-	3.3	0.3	3.8	3.0%	-	-	-	15.0	32.0%	1.03	Senegal	
2.6	1.5	13.7	5.4	23.2	11.1%	0.3	0.5	1.0	401.3	84.5%	1.19	South Africa	
0.6	-	40.3	2.8	43.8	1.4%	-	-	-	118.3	11.2%	2.64	Sudan	
0.5	-	14.9	3.2	18.6	2.7%	-	-	-	98.2	6.9%	3.42	United Rep. of Tanzania	
0.1	-	1.3	0.4	1.8	5.9%	-	-	-	12.6	19.1%	2.86	Togo	
0.2	0.4	1.5	0.3	2.4	8.4%	-	-	-	30.7	71.6%	0.53	Tunisia	
0.2	0.5	15.2	5.8	21.7	1.0%	0.0	-	-	152.6	2.7%	14.55	Zambia	
0.2	-	5.0	0.4	5.6	4.4%	-	-	-	29.6	48.7%	5.17	Zimbabwe	
2.6	-	73.1	15.6	91.3	2.8%	0.0	-	-	492.8	9.1%	3.50	Other Africa	
15.6	6.2	285.6	101.3	408.8	3.8%	0.5	2.5	2.8	3 652.1	28.2%	2.13	Africa	

* GHG / GDP PPP ratio is expressed in kg of CO₂-equivalent per 2005 USD. The high GHG / GDP PPP ratio for DR of Congo and Zambia is due to high levels of forest fires and subsequent post-burn decay.

2000 Greenhouse-gas emissions

 million tonnes of CO₂ equivalent using GWP-100

	CO ₂						CH ₄					
	Fuel comb.	Fugitive	Industrial processes	Other	Total	Share of energy	Energy	Agricult.	Waste	Other	Total	Share of energy
Bangladesh	25.3	-	1.6	7.5	34.5	73.5%	7.9	65.7	15.5	0.1	89.2	8.9%
Brunei Darussalam	4.4	0.3	0.1	7.5	12.3	38.3%	3.8	0.0	0.1	-	3.9	97.6%
Cambodia	2.0	-	-	3.2	5.2	38.0%	1.1	12.5	1.3	0.1	15.0	7.5%
Chinese Taipei	218.4	1.0	9.4	0.8	229.7	95.5%	1.3	1.1	5.3	0.0	7.7	16.6%
India	972.1	7.7	42.0	57.3	1 079.1	90.8%	82.1	376.0	101.1	2.4	561.6	14.6%
Indonesia	272.8	8.5	12.9	890.7	1 184.9	23.7%	45.6	78.9	39.9	3.4	167.8	27.2%
DPR of Korea	68.6	-	2.3	2.7	73.6	93.2%	10.2	3.9	3.1	0.1	17.3	58.7%
Malaysia	112.7	2.5	5.3	90.0	210.5	54.7%	17.8	5.6	4.8	1.0	29.2	60.8%
Mongolia	8.8	-	0.1	38.6	47.5	18.5%	0.3	8.5	0.3	0.2	9.2	2.9%
Myanmar	9.4	0.0	0.2	455.3	464.9	2.0%	6.2	44.3	5.7	10.9	66.9	9.2%
Nepal	3.1	-	0.1	0.1	3.4	91.2%	1.4	17.6	2.2	-	21.2	6.6%
Pakistan	99.2	2.0	4.7	0.4	106.2	95.2%	24.6	76.9	15.4	0.1	117.1	21.0%
Philippines	67.5	0.0	5.4	2.9	75.8	89.0%	6.1	31.5	12.2	0.0	49.9	12.3%
Singapore	47.6	0.2	0.6	0.4	48.6	98.1%	0.9	0.0	0.8	0.0	1.7	52.9%
Sri Lanka	10.6	-	0.5	0.6	11.7	91.2%	0.6	6.2	2.8	-	9.6	6.7%
Thailand	154.7	0.0	11.9	8.7	175.3	88.3%	16.4	54.5	12.5	0.1	83.4	19.6%
Vietnam	44.0	1.3	6.8	6.8	58.8	77.0%	14.4	51.4	9.6	0.0	75.4	19.1%
Other Asia	11.0	0.3	0.3	51.8	63.3	17.8%	2.4	16.0	4.0	0.9	23.3	10.3%
Asia	2 132.2	23.8	104.0	1 625.3	3 885.3	55.5%	243.1	850.5	236.5	19.4	1 349.6	18.0%
People's Rep. of China	3 310.1	14.9	352.4	100.5	3 777.9	88.0%	377.3	485.7	176.8	3.5	1 043.4	36.2%
Hong Kong, China	39.9	1.3	0.6	0.1	41.8	98.4%	0.8	-	1.9	-	2.7	28.9%
China	3 350.0	16.2	353.0	100.5	3 819.7	88.1%	378.1	485.7	178.8	3.5	1 046.1	36.1%
Argentina	139.0	1.9	4.2	9.2	154.3	91.3%	16.3	71.6	9.2	2.0	99.1	16.4%
Bolivia	7.1	0.7	0.4	131.2	139.4	5.6%	3.2	10.6	1.2	4.8	19.8	16.0%
Brazil	303.6	4.6	20.8	606.8	935.8	32.9%	27.7	245.5	53.8	16.0	343.0	8.1%
Colombia	59.2	1.4	5.1	41.4	107.1	56.6%	10.7	36.7	5.9	1.8	55.1	19.5%
Costa Rica	4.5	-	0.5	0.1	5.1	88.1%	0.2	2.2	0.5	-	2.9	6.9%
Cuba	27.1	1.3	0.7	3.5	32.6	86.9%	1.1	7.0	2.5	-	10.6	10.3%
Dominican Republic	17.1	-	1.3	0.4	18.7	91.2%	1.0	3.7	1.5	-	6.2	16.5%
Ecuador	17.3	2.2	1.1	0.9	21.6	90.7%	2.9	8.4	1.6	0.0	12.8	22.3%
El Salvador	5.2	-	0.4	0.2	5.9	88.7%	0.4	1.4	1.0	-	2.8	14.1%
Guatemala	8.5	0.0	0.8	108.5	117.7	7.2%	1.0	8.1	1.3	9.0	19.4	5.1%
Haiti	1.4	-	0.2	0.0	1.6	86.6%	0.7	2.3	1.2	-	4.1	17.5%
Honduras	4.4	-	0.4	3.3	8.2	54.0%	0.3	2.5	0.7	-	3.4	9.2%
Jamaica	9.7	-	0.4	0.1	10.2	95.0%	0.3	0.6	0.5	-	1.4	19.6%
Netherlands Antilles	4.5	-	-	0.0	4.5	99.0%	0.1	0.0	0.0	-	0.1	55.6%
Nicaragua	3.5	-	0.2	0.4	4.1	85.4%	0.4	4.2	1.0	-	5.6	6.5%
Panama	4.9	-	0.3	0.4	5.7	87.2%	0.2	2.1	0.5	-	2.8	5.8%
Paraguay	3.3	-	0.3	26.3	29.9	10.9%	0.7	12.4	1.0	1.1	15.2	4.8%
Peru	26.5	0.3	1.6	20.7	49.2	54.6%	1.5	10.1	3.7	1.0	16.3	9.3%
Trinidad and Tobago	21.1	0.2	0.4	0.0	21.6	98.2%	4.3	0.1	1.0	0.1	5.5	77.6%
Uruguay	5.3	0.0	0.3	0.4	6.0	87.8%	0.2	17.2	0.8	-	18.2	0.8%
Venezuela	126.7	6.7	3.9	38.6	175.9	75.9%	28.4	22.2	5.3	1.6	57.5	49.4%
Other Non-OECD Americas	15.0	-	0.9	16.8	32.7	45.9%	0.2	2.4	2.5	0.2	5.2	3.8%
Non-OECD Americas	814.8	19.3	44.4	1 009.3	1 887.9	44.2%	101.6	471.3	96.6	37.5	707.1	14.4%
Bahrain	14.1	0.0	0.0	0.1	14.3	98.8%	2.1	0.0	0.3	0.0	2.4	86.6%
Islamic Rep. of Iran	315.1	19.4	12.4	0.8	347.6	96.2%	48.6	19.8	11.3	0.0	79.7	61.0%
Iraq	70.3	12.6	0.9	3.3	87.1	95.2%	16.1	2.8	3.4	0.0	22.3	72.3%
Jordan	14.4	-	1.1	0.0	15.5	92.4%	0.2	0.4	0.8	-	1.4	16.5%
Kuwait	49.1	3.5	0.7	0.0	53.4	98.6%	9.4	0.1	0.7	0.0	10.2	91.9%
Lebanon	14.1	-	1.2	0.1	15.4	91.7%	0.1	0.2	0.6	-	0.9	12.1%
Oman	20.2	4.1	0.6	18.0	42.8	56.6%	9.4	0.5	0.4	-	10.3	90.9%
Qatar	24.0	6.0	0.5	0.0	30.4	98.3%	12.6	0.1	0.4	0.0	13.1	96.0%
Saudi Arabia	249.7	6.8	8.2	0.3	265.1	98.8%	34.8	1.9	4.9	0.2	41.8	83.2%
Syrian Arab Republic	39.8	5.4	2.1	0.2	47.5	95.2%	8.0	2.7	1.9	-	12.6	63.1%
United Arab Emirates	85.6	2.6	2.7	0.1	91.0	96.9%	18.6	0.5	0.8	-	19.9	93.5%
Yemen	13.2	1.2	0.7	0.0	15.2	95.0%	1.9	2.7	1.5	-	6.1	31.5%
Middle East	909.6	61.6	31.1	23.0	1 025.4	94.7%	161.7	31.7	27.0	0.3	220.7	73.3%

2000 Greenhouse-gas emissions

million tonnes of CO₂ equivalent using GWP-100

Energy	N ₂ O					Share of energy	HFCs	PFCs	SF ₆	Total			GHG / GDP PPP *
	Industrial processes	Agriculture	Other	Total	Industrial processes		Total	Share of energy	GHG / GDP PPP *				
1.5	-	16.2	1.9	19.6	7.4%	-	-	-	143.3	24.2%	1.14	Bangladesh	
0.0	-	0.1	0.3	0.4	2.6%	0.1	-	-	16.7	51.0%	1.05	Brunei Darussalam	
0.2	-	2.6	0.4	3.3	6.2%	-	-	-	23.4	14.0%	1.82	Cambodia	
0.9	0.5	2.1	1.2	4.7	19.9%	0.1	4.1	1.6	247.9	89.4%	0.49	Chinese Taipei	
23.4	1.6	149.9	24.6	199.5	11.7%	8.1	2.0	3.4	1 853.7	58.5%	1.02	India	
4.2	0.2	59.9	26.3	90.7	4.7%	-	0.2	0.8	1 444.4	22.9%	2.58	Indonesia	
0.4	-	2.0	0.8	3.3	12.9%	1.8	-	-	96.0	82.5%	0.93	DPR of Korea	
0.5	0.5	8.4	3.6	12.9	3.7%	0.0	0.1	0.4	253.2	52.7%	1.02	Malaysia	
0.1	-	4.6	0.4	5.1	2.7%	-	-	-	61.8	14.9%	11.61	Mongolia	
0.7	-	10.0	20.5	31.2	2.3%	-	-	-	563.1	2.9%	21.05	Myanmar	
0.6	-	3.2	0.4	4.2	13.4%	-	-	-	28.8	17.5%	1.30	Nepal	
3.1	0.7	17.8	3.2	24.8	12.4%	-	-	0.3	248.5	51.9%	0.93	Pakistan	
1.2	0.0	8.9	2.2	12.2	9.6%	-	-	0.2	138.2	54.2%	0.66	Philippines	
0.1	5.6	0.0	0.3	6.0	1.5%	0.7	0.4	0.3	57.8	84.3%	0.38	Singapore	
0.3	-	1.4	0.4	2.0	12.4%	-	-	-	23.3	49.4%	0.41	Sri Lanka	
3.7	0.4	13.5	2.5	20.1	18.7%	-	-	0.5	279.3	62.6%	0.80	Thailand	
1.2	-	16.6	1.8	19.6	6.1%	-	-	-	153.9	39.6%	1.24	Vietnam	
0.5	-	8.3	2.1	10.8	4.5%	0.0	-	-	97.4	14.5%	1.73	Other Asia	
42.6	9.5	325.5	93.0	470.6	9.0%	10.8	6.8	7.6	5 730.6	42.6%	1.23	Asia	
29.3	15.6	303.6	44.0	392.4	7.5%	38.1	8.0	10.8	5 270.5	70.8%	1.56	People's Rep. of China	
0.2	-	-	0.3	0.5	32.9%	-	-	0.2	45.2	93.2%	0.22	Hong Kong, China	
29.5	15.6	303.6	44.3	392.9	7.5%	38.1	8.0	10.9	5 315.7	71.0%	1.49	China	
1.4	0.1	36.0	4.4	42.0	3.4%	0.1	0.1	0.2	295.8	53.6%	0.78	Argentina	
0.1	-	5.5	5.8	11.3	0.8%	-	-	-	170.5	6.5%	5.75	Bolivia	
5.1	7.7	122.7	32.1	167.6	3.0%	0.1	4.1	0.8	1 451.4	23.5%	1.05	Brazil	
0.6	0.3	17.1	2.9	20.9	3.1%	-	0.0	0.0	183.1	39.3%	0.70	Colombia	
0.1	0.1	1.3	0.2	1.7	5.0%	0.0	-	-	9.6	49.1%	0.30	Costa Rica	
0.4	0.6	5.7	0.6	7.3	5.5%	0.0	-	-	50.5	59.0%	1.34	Cuba	
0.2	-	1.6	0.4	2.2	8.4%	-	-	-	27.2	67.3%	0.55	Dominican Republic	
0.2	-	3.5	0.4	4.1	3.8%	0.0	-	-	38.5	58.6%	0.58	Ecuador	
0.1	-	1.0	0.2	1.4	7.8%	0.0	-	-	10.1	56.7%	0.33	El Salvador	
0.3	-	8.2	6.0	14.4	1.8%	0.2	-	-	151.6	6.4%	3.41	Guatemala	
0.1	-	1.2	0.1	1.4	5.3%	-	-	-	7.2	30.8%	0.73	Haiti	
0.1	-	2.6	0.4	3.1	2.8%	-	-	-	14.8	32.7%	0.82	Honduras	
0.1	-	0.4	0.2	0.6	8.9%	0.0	-	-	12.3	82.0%	0.72	Jamaica	
0.0	-	0.0	0.1	0.1	15.5%	-	-	-	4.7	96.6%	2.23	Netherlands Antilles	
0.1	-	2.9	0.3	3.3	2.7%	-	-	-	13.0	30.6%	0.92	Nicaragua	
0.0	-	0.9	0.1	1.0	4.7%	-	-	-	9.5	54.2%	0.40	Panama	
0.2	-	6.1	1.5	7.8	1.9%	-	-	-	52.9	7.8%	2.55	Paraguay	
0.2	0.0	5.9	1.6	7.7	3.1%	0.1	-	-	73.3	39.0%	0.51	Peru	
0.0	-	0.1	0.1	0.2	10.5%	-	-	-	27.4	93.3%	1.53	Trinidad and Tobago	
0.1	-	6.1	0.1	6.3	1.6%	0.0	-	-	30.6	18.2%	0.96	Uruguay	
0.5	0.0	10.1	2.6	13.2	3.7%	0.5	0.5	0.2	247.8	65.5%	1.07	Venezuela	
0.1	-	2.4	0.8	3.2	3.2%	0.0	0.0	0.0	41.2	37.2%	1.12	Other Non-OECD Americas	
9.9	8.9	241.2	61.0	320.9	3.1%	1.1	4.7	1.2	2 922.9	32.4%	1.01	Non-OECD Americas	
0.0	-	0.0	0.1	0.1	26.8%	-	0.2	-	17.0	95.3%	1.12	Bahrain	
2.1	0.5	18.4	3.1	24.1	8.8%	-	0.1	1.7	453.2	85.0%	0.92	Islamic Rep. of Iran	
0.3	-	3.3	0.8	4.5	7.4%	-	-	0.2	114.0	87.1%	1.02	Iraq	
0.1	-	0.3	0.2	0.6	8.5%	0.0	-	-	17.6	83.4%	1.02	Jordan	
0.1	-	0.1	0.3	0.5	27.9%	0.1	-	0.4	64.6	96.2%	0.87	Kuwait	
0.1	-	0.3	0.2	0.6	14.0%	-	-	-	16.9	84.6%	0.52	Lebanon	
0.1	-	0.3	0.1	0.5	14.8%	0.0	-	-	53.6	62.8%	1.25	Oman	
0.1	-	0.1	0.1	0.3	26.9%	-	-	-	43.8	97.2%	1.14	Qatar	
0.9	-	2.8	2.4	6.0	14.4%	0.1	-	1.3	314.2	93.0%	0.77	Saudi Arabia	
0.3	0.2	3.6	0.6	4.7	6.1%	-	-	-	64.8	82.5%	1.08	Syrian Arab Republic	
0.2	-	0.5	0.5	1.1	15.5%	-	0.2	0.7	112.9	94.8%	0.54	United Arab Emirates	
0.2	-	2.1	0.4	2.7	9.2%	-	-	-	24.0	69.1%	0.64	Yemen	
4.5	0.7	31.8	8.7	45.7	9.8%	0.3	0.6	4.1	1 296.7	87.7%	0.84	Middle East	

* GHG / GDP PPP ratio is expressed in kg of CO₂-equivalent per 2005 USD. The high GHG / GDP PPP ratio for Mongolia is due to high levels of peat decay.

2005 Greenhouse-gas emissions

 million tonnes of CO₂ equivalent using GWP-100

	CO ₂						CH ₄					
	Fuel comb.	Fugitive	Industrial processes	Other	Total	Share of energy	Energy	Agricult.	Waste	Other	Total	Share of energy
World *	27 501.4	452.9	1 311.6	7 084.9	36 350.8	76.9%	2 533.7	3 170.3	1 225.4	283.9	7 213.3	35.1%
<i>Annex I Parties</i>	14 117.5	177.7	412.3	667.7	15 375.2	93.0%	912.3	663.2	446.3	20.9	2 042.7	44.7%
<i>Annex II Parties</i>	11 296.4	49.8	282.2	333.6	11 962.0	94.9%	404.7	526.0	306.1	11.4	1 248.2	32.4%
<i>North America</i>	6 326.9	22.0	87.8	111.9	6 548.6	96.9%	256.5	216.7	162.9	6.4	642.5	39.9%
<i>Europe</i>	3 342.4	18.5	131.1	163.3	3 655.3	91.9%	106.0	184.1	122.1	1.8	414.0	25.6%
<i>Asia Oceania</i>	1 627.1	9.3	63.3	58.4	1 758.1	93.1%	42.1	125.2	21.2	3.2	191.8	22.0%
<i>Annex I EIT</i>	2 602.0	125.6	106.8	332.7	3 167.1	86.1%	497.2	115.5	107.7	9.4	729.8	68.1%
<i>Non-Annex I Parties</i>	12 410.4	275.2	899.3	6 417.3	20 002.2	63.4%	1 620.3	2 507.1	779.1	263.0	5 169.5	31.3%
<i>Annex I Kyoto Parties</i>	8 064.7	156.4	309.1	554.6	9 084.9	90.5%	690.4	442.8	277.2	17.7	1 428.2	48.3%
Int. marine bunkers	557.3	-	-	-	557.3	100.0%	1.0	-	-	-	1.0	100%
Int. aviation bunkers	416.1	-	-	-	416.1	100.0%	0.1	-	-	-	0.1	100%
Non-OECD Total	13 504.0	381.1	936.8	6 658.6	21 480.5	64.6%	2 013.1	2 522.7	827.1	269.9	5 632.9	35.7%
OECD Total	13 024.0	71.9	374.8	426.3	13 896.9	94.2%	519.5	647.6	398.3	14.0	1 579.3	32.9%
Canada	555.2	3.0	10.2	42.8	611.3	91.3%	46.0	26.1	31.2	3.3	106.7	43.2%
Chile	58.2	0.4	1.9	0.3	60.8	96.3%	4.5	7.2	6.4	0.2	18.2	24.6%
Mexico	385.8	3.7	19.8	52.0	461.2	84.4%	36.5	54.3	20.4	2.1	113.3	32.2%
United States	5 771.7	19.0	77.7	69.1	5 937.4	97.5%	210.5	190.6	131.7	3.1	535.8	39.3%
OECD Americas	6 770.8	26.1	109.5	164.2	7 070.7	96.1%	297.5	278.2	189.6	8.7	774.0	38.4%
Australia	380.2	3.5	6.1	22.6	412.5	93.0%	37.7	70.1	11.4	2.8	122.0	30.9%
Israel	58.7	0.0	2.3	0.2	61.2	95.9%	0.7	1.1	1.7	0.0	3.5	19.6%
Japan	1 213.0	5.7	56.6	30.7	1 306.0	93.3%	3.5	30.2	8.3	0.3	42.2	8.2%
Korea	469.1	11.0	27.8	0.5	508.4	94.4%	6.4	12.3	13.2	0.1	32.0	20.0%
New Zealand	33.9	0.1	0.5	5.1	39.6	85.7%	1.0	24.9	1.6	0.0	27.5	3.6%
OECD Asia Oceania	2 154.9	20.3	93.4	59.1	2 327.7	93.5%	49.2	138.6	36.1	3.3	227.2	21.7%
Austria	74.7	0.5	3.8	0.5	79.5	94.5%	1.8	4.1	2.4	0.0	8.4	21.9%
Belgium	113.0	0.1	5.2	0.6	119.0	95.1%	1.2	5.7	2.7	0.0	9.6	12.7%
Czech Republic	119.6	3.7	3.9	1.0	128.1	96.2%	5.0	3.9	3.2	0.0	12.0	41.4%
Denmark	48.4	0.4	1.6	3.0	53.4	91.3%	1.3	5.2	1.5	-	8.0	16.4%
Estonia	16.9	-	0.4	10.3	27.5	61.3%	0.9	0.6	0.7	-	2.2	41.3%
Finland	55.3	0.5	1.3	51.3	108.3	51.5%	0.8	2.0	6.9	0.0	9.8	8.3%
France	388.3	2.8	21.3	7.6	420.1	93.1%	34.4	36.9	11.5	0.1	82.9	41.5%
Germany	800.2	3.7	20.9	35.4	860.2	93.5%	16.5	29.6	15.4	0.2	61.7	26.7%
Greece	95.0	0.0	7.6	0.4	103.0	92.2%	1.9	3.6	2.6	0.0	8.2	23.3%
Hungary	56.4	0.3	2.0	1.0	59.7	94.9%	2.3	2.6	2.9	0.0	7.9	29.4%
Iceland	2.2	-	0.1	17.6	19.9	11.0%	0.0	0.2	0.1	0.0	0.3	1.2%
Ireland	44.0	-	2.4	8.9	55.2	79.6%	1.8	11.8	1.4	0.0	15.0	12.1%
Italy	460.8	0.6	25.3	2.3	489.1	94.4%	6.1	16.2	17.7	0.1	40.1	15.2%
Luxembourg	11.4	-	0.5	0.0	11.9	95.3%	0.1	0.9	0.1	0.0	1.1	10.6%
Netherlands	182.7	0.7	1.5	6.5	191.3	95.8%	5.0	9.2	6.9	0.1	21.3	23.7%
Norway	36.4	1.2	0.9	0.7	39.2	95.9%	12.4	2.1	2.3	0.1	16.9	73.2%
Poland	292.9	0.5	7.3	25.4	326.2	90.0%	46.2	15.4	9.0	0.0	70.6	65.4%
Portugal	62.8	0.0	4.5	0.3	67.7	92.8%	1.6	4.3	6.9	0.8	13.6	11.8%
Slovak Republic	38.1	0.2	2.2	0.4	40.8	93.6%	0.8	1.5	1.7	0.0	4.1	20.4%
Slovenia	15.6	-	1.7	0.3	17.6	88.8%	1.1	1.1	0.7	0.0	3.0	37.4%
Spain	339.4	1.1	20.9	1.5	362.9	93.8%	4.0	20.6	11.3	0.4	36.3	11.0%
Sweden	50.3	0.9	2.1	14.6	67.9	75.4%	1.2	3.2	7.1	0.0	11.5	10.3%
Switzerland	44.6	0.0	1.9	0.4	46.9	95.1%	0.9	3.2	0.8	0.0	5.0	19.2%
Turkey	216.4	2.3	23.3	1.4	243.3	89.9%	10.4	21.6	32.3	0.1	64.4	16.2%
United Kingdom	532.9	5.9	9.4	11.4	559.6	96.3%	14.8	25.1	24.4	0.0	64.4	23.0%
OECD Europe	4 098.2	25.4	171.9	203.0	4 498.6	91.7%	172.8	230.8	172.6	2.0	578.1	29.9%
<i>European Union - 27</i>	3 970.8	22.9	157.5	195.3	4 346.5	91.9%	165.9	217.5	153.9	2.0	539.3	30.8%

* Total World includes Non-OECD total, OECD total as well as international bunkers.

 Sources: IEA, Sectoral Approach for CO₂ emissions from fuel combustion. EDGAR 4.2 FT2010 database for other emissions. In general, estimates for emissions other than CO₂ from fuel combustion are subject to significantly larger uncertainties.

2005 Greenhouse-gas emissions

million tonnes of CO₂ equivalent using GWP-100

Energy	N ₂ O					Share of energy	HFCs	PFCs	SF ₆	Total			
	Industrial processes	Agriculture	Other	Total			Industrial processes			Total	Share of energy	GHG / GDP PPP *	
313.1	163.7	1 953.7	566.9	2 997.4	10.4%	534.8	93.3	131.2	47 320.8	65.1%	0.83	World	
144.6	123.0	537.2	141.5	946.3	15.3%	347.2	64.2	73.5	18 849.1	81.4%	0.54	Annex I Parties	
122.5	78.1	420.7	103.6	724.8	16.9%	312.3	35.4	62.0	14 344.8	82.8%	0.47	Annex II Parties	
80.4	27.5	202.6	50.3	360.8	22.3%	198.2	15.2	46.1	7 811.5	85.6%	0.57	North America	
27.8	45.7	148.6	35.9	258.0	10.8%	67.4	11.5	10.9	4 417.0	79.1%	0.36	Europe	
14.3	4.9	69.4	17.4	106.0	13.5%	46.6	8.7	5.0	2 116.2	80.0%	0.45	Asia Oceania	
18.5	41.1	94.8	34.4	188.8	9.8%	32.0	28.2	9.8	4 155.8	78.0%	1.17	Annex I EIT	
139.5	40.7	1 416.5	425.4	2 022.0	6.9%	187.6	29.1	57.7	27 468.2	52.6%	1.23	Non-Annex I Parties	
67.3	91.6	328.0	94.3	581.1	11.6%	157.5	54.6	29.9	11 336.2	79.2%	0.53	Annex I Kyoto Parties	
22.7	-	-	-	22.7	100%	-	-	-	581.0	100.0%	..	Int. marine bunkers	
6.4	-	-	-	6.4	100%	-	-	-	422.5	100.0%	..	Int. aviation bunkers	
142.6	68.2	1 440.1	442.8	2 093.7	6.8%	201.7	53.7	61.7	29 524.1	54.3%	1.34	Non-OECD Total	
141.4	95.5	513.6	124.1	874.6	16.2%	333.2	39.6	69.5	16 793.1	81.9%	0.48	OECD Total	
7.2	2.1	23.6	7.2	40.2	18.0%	11.9	6.2	4.2	780.5	78.4%	0.69	Canada	
0.8	0.9	6.0	0.9	8.6	9.6%	-	0.0	0.0	87.6	72.9%	0.42	Chile	
3.4	1.2	31.9	7.1	43.6	7.8%	7.1	-	0.4	625.6	68.6%	0.48	Mexico	
73.1	25.4	179.0	43.1	320.6	22.8%	186.3	9.0	42.0	7 031.0	86.4%	0.56	United States	
84.6	29.6	240.5	58.4	413.0	20.5%	205.3	15.2	46.5	8 524.8	84.2%	0.56	OECD Americas	
4.7	1.8	48.9	7.7	63.0	7.4%	5.1	0.8	0.5	604.0	70.6%	0.84	Australia	
0.3	0.2	0.9	0.6	2.0	14.0%	1.3	0.1	0.6	68.7	86.9%	0.43	Israel	
9.2	3.1	8.3	9.4	30.0	30.6%	40.8	7.6	4.5	1 431.2	86.0%	0.37	Japan	
3.3	2.2	4.9	3.6	14.0	23.3%	4.9	2.5	4.6	566.4	86.5%	0.52	Korea	
0.5	-	12.2	0.3	13.0	3.5%	0.7	0.2	0.1	81.0	43.6%	0.77	New Zealand	
17.9	7.4	75.2	21.6	122.0	14.6%	52.9	11.2	10.2	2 751.3	81.5%	0.46	OECD Asia Oceania	
0.8	0.3	2.3	0.8	4.2	19.1%	1.9	0.2	0.2	94.4	82.4%	0.34	Austria	
0.8	3.9	2.9	1.2	8.8	8.9%	1.9	0.0	0.1	139.3	82.6%	0.41	Belgium	
2.4	1.1	3.3	0.9	7.6	31.2%	1.1	0.0	0.0	148.8	87.8%	0.68	Czech Republic	
0.6	-	4.6	0.6	5.8	10.1%	1.2	0.0	0.0	68.5	74.0%	0.38	Denmark	
0.2	-	0.6	0.2	1.0	23.3%	0.0	0.0	0.0	30.7	58.6%	1.38	Estonia	
1.9	1.6	3.0	0.6	7.1	26.5%	0.8	0.0	0.1	126.0	46.4%	0.78	Finland	
4.0	6.9	32.8	4.6	48.2	8.2%	12.7	0.7	1.6	566.2	75.9%	0.30	France	
5.9	10.4	29.5	5.7	51.5	11.4%	14.7	1.4	5.4	995.0	83.0%	0.39	Germany	
1.0	0.5	3.5	1.0	6.0	16.0%	1.9	0.1	0.1	119.4	82.0%	0.44	Greece	
0.3	1.8	4.2	0.7	7.0	4.8%	1.2	0.3	0.0	76.1	78.0%	0.44	Hungary	
0.0	0.0	0.3	0.0	0.4	10.2%	0.0	0.1	0.0	20.8	10.8%	2.00	Iceland	
0.3	-	6.8	0.4	7.5	4.4%	0.9	0.2	0.1	78.8	58.5%	0.49	Ireland	
3.3	7.5	12.5	5.3	28.7	11.6%	9.1	0.4	0.9	568.2	82.9%	0.34	Italy	
0.1	-	0.3	0.1	0.5	20.0%	0.1	0.0	-	13.6	85.5%	0.43	Luxembourg	
0.9	5.6	5.8	1.3	13.5	6.4%	3.1	0.4	0.1	229.7	82.4%	0.40	Netherlands	
0.4	1.9	1.8	0.8	5.0	7.4%	0.3	4.6	0.3	66.3	75.9%	0.30	Norway	
4.1	4.8	17.4	2.6	29.0	14.2%	1.7	0.6	0.2	428.3	80.2%	0.81	Poland	
0.7	0.5	2.6	2.1	6.0	11.8%	0.6	0.0	0.1	88.1	73.9%	0.39	Portugal	
0.4	1.2	1.3	0.3	3.3	13.4%	0.3	0.1	-	48.6	81.4%	0.56	Slovak Republic	
0.2	-	0.8	0.2	1.1	13.3%	0.4	0.1	0.0	22.1	76.1%	0.47	Slovenia	
3.0	1.7	16.6	5.0	26.3	11.4%	6.3	2.0	0.7	434.6	80.0%	0.37	Spain	
1.1	0.5	3.5	0.8	5.9	19.0%	1.1	0.7	0.2	87.4	61.3%	0.30	Sweden	
0.4	0.1	1.4	0.5	2.5	17.5%	1.6	0.1	0.3	56.4	81.6%	0.21	Switzerland	
3.6	3.9	21.8	3.4	32.6	10.9%	2.9	0.5	1.6	345.4	67.4%	0.44	Turkey	
2.7	4.1	18.4	5.0	30.2	9.0%	9.0	0.6	0.6	664.3	83.7%	0.33	United Kingdom	
39.0	58.5	197.9	44.1	339.6	11.5%	75.0	13.1	12.7	5 517.1	78.6%	0.39	OECD Europe	
35.9	58.4	184.4	41.8	320.5	11.2%	72.7	8.2	10.4	5 297.7	79.2%	0.40	European Union - 27	

* GHG / GDP PPP ratio is expressed in kg of CO₂-equivalent per 2005 USD.

2005 Greenhouse-gas emissions

 million tonnes of CO₂ equivalent using GWP-100

	CO ₂						CH ₄					
	Fuel comb.	Fugitive	Industrial processes	Other	Total	Share of energy	Energy	Agricult.	Waste	Other	Total	Share of energy
Non-OECD Total	13 504.0	381.1	936.8	6 658.6	21 480.5	64.6%	2 013.1	2 522.7	827.1	269.9	5 632.9	35.7%
Albania	4.0	0.0	0.2	0.6	4.8	83.1%	0.6	1.7	0.2	0.0	2.5	22.2%
Armenia	4.1	-	0.3	0.3	4.7	87.0%	1.5	1.1	0.4	0.0	3.0	50.8%
Azerbaijan	30.8	0.3	0.7	0.3	32.1	96.9%	5.5	5.0	1.6	0.0	12.1	45.6%
Belarus	62.1	0.0	2.2	42.6	106.9	58.1%	1.0	8.1	4.9	0.0	14.0	6.8%
Bosnia-Herzegovina	15.6	0.2	0.5	0.4	16.7	95.1%	1.2	1.2	0.3	0.0	2.7	45.2%
Bulgaria	46.1	0.4	4.2	0.4	51.1	91.0%	1.4	2.1	9.2	0.1	12.8	11.3%
Croatia	20.7	0.0	1.8	0.0	22.6	91.9%	2.2	1.3	1.0	0.0	4.5	48.9%
Cyprus *	7.0	-	0.7	0.0	7.7	90.5%	0.0	0.3	0.3	-	0.6	2.2%
Georgia	4.3	0.0	0.2	0.3	4.8	89.5%	1.6	2.2	0.6	0.0	4.4	36.1%
Gibraltar	0.5	-	-	0.0	0.5	99.9%	0.0	-	0.0	-	0.0	6.7%
Kazakhstan	157.1	16.2	4.5	0.4	178.1	97.2%	35.1	11.9	4.7	2.2	53.9	65.2%
Kosovo **	6.5	..	..	..	..	..	..	..	..	..	..	..
Kyrgyzstan	4.9	0.0	0.4	0.5	5.7	84.9%	0.2	2.6	0.7	0.0	3.6	6.8%
Latvia	7.6	-	0.3	4.3	12.2	61.8%	1.7	0.9	0.6	0.0	3.1	53.7%
Lithuania	13.5	0.0	0.4	6.1	20.0	67.5%	1.8	1.9	1.4	0.0	5.0	35.1%
FYR of Macedonia	8.8	-	0.3	0.1	9.2	95.6%	0.5	0.7	0.3	0.0	1.4	32.7%
Malta	2.7	-	0.0	0.0	2.7	99.6%	0.0	0.0	0.2	-	0.2	0.8%
Republic of Moldova	7.7	-	0.3	0.1	8.1	94.5%	1.7	1.0	0.8	0.0	3.5	47.8%
Montenegro **	1.7	..	..	..	..	..	..	..	..	..	..	..
Romania	95.2	0.7	6.0	1.5	103.4	92.7%	11.9	8.8	5.2	0.0	26.0	46.0%
Russian Federation	1 511.8	98.7	52.5	233.1	1 896.1	84.9%	376.7	51.0	57.2	8.8	493.8	76.3%
Serbia **	49.2	0.0	1.3	0.7	51.1	96.2%	3.0	3.4	1.1	0.0	7.6	39.8%
Tajikistan	2.3	0.0	0.1	0.0	2.5	93.0%	0.5	2.7	0.7	0.0	3.9	12.5%
Turkmenistan	47.8	2.6	0.3	0.5	51.2	98.5%	22.6	6.1	0.9	0.0	29.5	76.5%
Ukraine	305.6	21.2	21.8	6.2	354.8	92.1%	44.2	16.4	10.0	0.3	70.9	62.4%
Uzbekistan	108.5	4.6	2.4	1.5	117.1	96.6%	25.4	13.4	3.5	0.0	42.4	60.0%
Non-OECD Europe and Eurasia	2 526.1	144.9	101.5	300.1	3 072.6	86.9%	540.3	143.5	105.8	11.6	801.3	67.4%
Algeria	79.4	11.3	5.5	0.2	96.3	94.1%	36.5	4.5	4.7	0.0	45.6	80.0%
Angola	7.2	8.5	0.5	5.6	21.8	71.8%	10.6	3.9	1.9	0.0	16.4	64.6%
Benin	2.7	-	0.1	20.2	23.0	11.5%	0.9	2.0	1.0	0.5	4.4	20.5%
Botswana	4.4	-	0.2	0.4	5.0	88.4%	0.5	3.9	0.3	0.0	4.7	10.2%
Cameroon	2.9	1.7	0.4	35.6	40.6	11.5%	2.2	8.0	2.5	0.9	13.7	16.3%
Congo	0.8	3.2	0.0	37.6	41.6	9.6%	3.8	1.8	0.5	1.5	7.7	49.9%
Dem. Rep. of Congo	2.3	0.0	0.2	833.8	836.3	0.3%	5.9	14.1	6.3	31.3	57.7	10.3%
Côte d'Ivoire	5.8	0.1	0.3	114.3	120.5	4.9%	3.3	2.0	2.4	4.8	12.5	26.4%
Egypt	152.7	3.1	14.4	1.1	171.2	91.0%	24.7	14.8	8.3	0.0	47.8	51.6%
Eritrea	0.6	-	0.0	0.0	0.6	94.4%	0.4	1.8	0.4	-	2.6	16.1%
Ethiopia	4.5	-	0.7	0.6	5.8	77.8%	7.8	38.3	6.9	-	53.0	14.7%
Gabon	1.7	4.2	0.1	6.2	12.2	48.5%	3.5	0.1	0.3	0.4	4.3	81.5%
Ghana	6.4	-	0.8	9.6	16.8	38.3%	2.9	3.7	2.9	0.4	10.0	29.6%
Kenya	7.6	-	1.1	3.8	12.4	60.8%	7.2	14.5	3.9	-	25.6	28.2%
Libya	45.1	8.3	1.7	0.1	55.3	96.6%	14.3	0.8	1.1	0.0	16.3	87.7%
Morocco	39.5	-	4.6	0.3	44.3	89.0%	0.9	5.5	4.2	0.0	10.6	8.3%
Mozambique	1.5	-	0.2	34.9	36.6	4.1%	3.4	6.0	2.3	2.0	13.7	25.0%
Namibia	2.5	-	0.0	0.0	2.5	98.2%	0.1	4.9	0.2	0.0	5.3	2.3%
Nigeria	55.2	37.6	1.1	8.1	102.0	91.0%	43.3	26.1	14.5	0.2	84.1	51.5%
Senegal	4.7	-	1.1	0.1	5.8	80.0%	1.2	5.0	1.6	-	7.7	15.0%
South Africa	329.2	15.6	6.3	4.7	355.8	96.9%	30.5	20.0	12.5	2.4	65.3	46.6%
Sudan	9.7	0.0	0.1	4.1	14.0	69.9%	6.6	58.9	5.2	-	70.7	9.3%
United Rep. of Tanzania	5.0	0.0	0.6	65.1	70.8	7.1%	5.1	20.7	4.2	3.6	33.6	15.3%
Togo	1.0	-	0.3	7.4	8.7	11.2%	1.5	1.2	0.7	0.4	3.7	39.6%
Tunisia	20.2	0.5	3.1	0.2	23.9	86.3%	3.6	2.1	1.5	0.0	7.2	50.0%
Zambia	2.1	-	0.3	124.2	126.6	1.6%	2.4	12.3	1.2	5.4	21.2	11.1%
Zimbabwe	10.3	0.4	0.3	1.0	11.9	89.5%	1.1	7.1	1.5	0.0	9.7	11.4%
Other Africa	23.8	2.5	1.1	246.7	274.0	9.6%	26.1	105.7	17.3	9.6	158.6	16.4%
Africa	828.7	96.8	45.1	1 565.8	2 536.4	36.5%	250.3	389.7	110.2	63.4	813.6	30.8%

* Please refer to Part I, Chapter 4, Geographical Coverage.

 ** For 2010, Serbia includes Kosovo and Montenegro for all emissions other than C_{O2} from fuel combustion.

2005 Greenhouse-gas emissions

million tonnes of CO₂ equivalent using GWP-100

Energy	N ₂ O					Share of energy	HFCs	PFCs	SF ₆	Total			GHG / GDP PPP *
	Industrial processes	Agriculture	Other	Total	Industrial processes		Total	Share of energy					
142.6	68.2	1 440.1	442.8	2 093.7	6.8%	201.7	53.7	61.7	29 524.1	54.3%	1.34	Non-OECD Total	
0.1	-	0.8	0.2	1.0	7.2%	0.1	-	-	8.4	55.1%	0.44	Albania	
0.0	-	0.5	0.1	0.6	1.0%	0.3	-	-	8.6	65.4%	0.69	Armenia	
0.2	-	2.0	0.4	2.6	6.2%	0.1	0.2	-	47.1	78.2%	1.25	Azerbaijan	
0.6	2.2	8.5	0.6	11.9	5.1%	0.4	0.0	-	133.3	47.7%	1.60	Belarus	
0.1	-	0.7	0.2	1.0	12.7%	0.4	0.1	-	21.0	82.1%	0.87	Bosnia-Herzegovina	
0.3	0.9	2.0	0.6	4.0	8.8%	0.4	0.0	-	68.3	70.8%	0.90	Bulgaria	
0.2	0.8	1.5	0.3	2.8	8.5%	0.0	0.0	-	30.0	77.4%	0.44	Croatia	
0.0	-	0.2	0.1	0.3	13.0%	0.2	-	-	8.8	79.8%	0.48	Cyprus	
0.1	0.7	1.1	0.2	2.0	3.2%	0.0	-	-	11.3	53.1%	0.72	Georgia	
0.0	-	-	0.0	0.0	34.4%	-	-	-	0.5	97.5%	0.57	Gibraltar	
2.6	-	11.0	4.5	18.1	14.2%	0.3	-	-	250.4	84.2%	1.90	Kazakhstan	
..	..	..	..	..	..	..	..	..	..	..	..	Kosovo
0.2	-	1.1	0.2	1.5	11.0%	0.0	-	-	10.8	48.5%	1.22	Kyrgyzstan	
0.2	-	1.0	0.2	1.3	12.0%	0.9	0.0	-	17.5	53.6%	0.58	Latvia	
0.1	2.0	2.1	0.2	4.5	2.7%	0.6	0.0	-	30.2	51.1%	0.62	Lithuania	
0.1	-	0.4	0.1	0.6	17.6%	0.1	-	-	11.3	82.5%	0.71	FYR of Macedonia	
0.0	-	0.0	0.0	0.1	11.6%	0.1	-	-	3.1	86.3%	0.37	Malta	
0.1	-	0.6	0.2	0.9	6.0%	0.0	-	-	12.5	75.1%	1.48	Republic of Moldova	
..	..	..	..	..	..	..	..	..	..	..	..	Montenegro
0.7	2.9	6.5	1.3	11.4	6.0%	0.4	0.3	0.0	141.5	76.7%	0.70	Romania	
7.3	13.5	33.7	23.5	78.1	9.4%	24.2	26.6	9.3	2 528.0	78.9%	1.49	Russian Federation	
0.2	0.5	2.9	0.4	4.1	5.0%	4.3	0.1	-	67.1	78.0%	1.06	Serbia	
0.0	-	1.2	0.2	1.4	1.1%	0.0	0.4	-	8.2	34.8%	0.84	Tajikistan	
0.1	0.6	3.3	0.3	4.3	1.8%	0.1	-	-	85.1	85.9%	3.77	Turkmenistan	
1.4	9.8	11.9	2.9	26.0	5.6%	0.2	0.2	0.3	452.4	82.3%	1.72	Ukraine	
0.5	0.1	8.4	1.1	10.1	5.0%	0.6	-	-	170.2	81.7%	3.25	Uzbekistan	
15.1	34.0	101.6	37.8	188.5	8.0%	33.9	28.0	9.6	4 133.9	78.0%	1.41	Non-OECD Europe and Eurasia	
0.4	0.7	2.9	0.9	4.9	8.2%	0.2	-	0.3	147.4	86.6%	0.63	Algeria	
0.2	-	2.6	0.3	3.1	6.6%	0.0	-	-	41.2	64.0%	0.75	Angola	
0.1	-	1.8	1.0	2.9	4.2%	-	-	-	30.3	12.1%	2.94	Benin	
0.1	-	2.8	0.2	3.1	2.9%	-	-	-	12.8	39.1%	0.59	Botswana	
0.2	-	6.8	2.0	9.0	2.6%	-	0.4	-	63.8	11.2%	1.83	Cameroon	
0.1	-	1.8	1.7	3.6	1.9%	0.0	-	-	52.9	14.9%	4.43	Congo	
1.3	-	16.3	37.1	54.7	2.3%	-	-	-	948.7	1.0%	59.65	Dem. Rep. of Congo	
0.2	-	2.1	5.1	7.5	3.1%	-	-	-	140.4	6.7%	4.68	Côte d'Ivoire	
1.3	3.2	15.2	2.3	22.0	6.0%	0.3	1.7	1.1	244.2	74.4%	0.73	Egypt	
0.0	-	1.1	0.1	1.2	4.1%	-	-	-	4.4	23.7%	1.65	Eritrea	
1.6	-	26.8	1.9	30.3	5.3%	0.0	-	-	89.0	15.6%	1.88	Ethiopia	
0.0	-	0.1	0.3	0.5	10.2%	0.0	-	-	17.0	55.8%	0.95	Gabon	
0.4	-	3.4	1.0	4.8	9.3%	0.0	0.0	-	31.6	31.1%	1.21	Ghana	
0.6	-	9.4	0.6	10.6	5.7%	-	-	-	48.6	31.6%	1.01	Kenya	
0.2	-	0.7	0.5	1.3	11.9%	-	-	0.3	73.1	92.8%	0.90	Libya	
0.5	-	4.8	0.8	6.1	8.0%	-	-	-	61.1	66.8%	0.56	Morocco	
0.3	-	6.5	2.5	9.3	3.5%	0.1	0.2	-	60.0	8.8%	4.31	Mozambique	
0.1	-	3.5	0.2	3.9	3.4%	-	-	-	11.6	23.4%	1.07	Namibia	
2.0	-	16.6	3.0	21.6	9.4%	0.3	-	0.3	208.4	66.3%	0.85	Nigeria	
0.1	-	3.6	0.4	4.0	3.0%	-	-	-	17.5	33.8%	0.96	Senegal	
2.9	2.1	14.4	5.8	25.2	11.5%	0.5	0.5	1.5	448.9	84.3%	1.11	South Africa	
0.6	-	44.8	3.3	48.7	1.3%	-	-	-	133.3	12.7%	2.22	Sudan	
0.6	-	16.7	4.2	21.4	2.7%	-	-	-	125.8	8.6%	3.12	United Rep. of Tanzania	
0.1	-	1.1	0.5	1.7	6.7%	-	-	-	14.2	18.1%	3.06	Togo	
0.2	0.3	1.6	0.3	2.4	9.0%	-	-	-	33.5	73.0%	0.47	Tunisia	
0.2	0.4	17.4	6.7	24.7	1.0%	0.0	-	-	172.5	2.7%	13.00	Zambia	
0.2	-	5.1	0.4	5.7	3.9%	-	-	-	27.3	43.9%	7.02	Zimbabwe	
3.0	-	77.4	16.6	97.1	3.1%	0.1	-	-	529.8	10.4%	2.78	Other Africa	
17.9	6.8	306.9	99.7	431.3	4.1%	1.6	2.9	3.6	3 789.3	31.5%	1.76	Africa	

* GHG / GDP PPP ratio is expressed in kg of CO₂-equivalent per 2005 USD. The high GHG / GDP PPP ratio for DR of Congo and Zambia is due to high levels of forest fires and subsequent post-burn decay.

2005 Greenhouse-gas emissions

million tonnes of CO₂ equivalent using GWP-100

	CO ₂						CH ₄					
	Fuel comb.	Fugitive	Industrial processes	Other	Total	Share of energy	Energy	Agricult.	Waste	Other	Total	Share of energy
Bangladesh	36.8	-	2.3	7.6	46.7	78.9%	9.7	66.5	17.9	0.1	94.2	10.3%
Brunei Darussalam	4.8	0.2	0.1	12.1	17.2	29.0%	3.9	0.0	0.1	0.5	4.5	86.2%
Cambodia	2.6	-	-	31.1	33.7	7.8%	1.2	15.5	1.6	2.3	20.5	5.6%
Chinese Taipei	262.5	0.7	10.0	0.9	274.2	96.0%	1.4	1.1	5.8	0.0	8.3	17.0%
India	1 164.4	19.5	60.4	48.7	1 293.0	91.6%	93.5	375.9	113.3	1.8	584.5	16.0%
Indonesia	335.7	5.6	15.4	2 054.9	2 411.6	14.2%	49.0	98.3	50.8	61.6	259.7	18.9%
DPR of Korea	73.8	-	3.0	2.7	79.5	92.9%	11.8	4.3	3.2	0.1	19.3	60.9%
Malaysia	150.9	3.2	8.1	113.2	275.4	56.0%	22.1	5.8	5.7	2.8	36.5	60.7%
Mongolia	9.5	0.0	0.1	42.8	52.4	18.1%	0.4	5.6	0.3	0.0	6.3	5.9%
Myanmar	10.6	0.0	0.2	387.8	398.7	2.7%	9.7	54.3	6.4	7.8	78.2	12.4%
Nepal	3.0	-	0.1	0.2	3.4	89.4%	1.4	18.4	2.5	0.0	22.3	6.4%
Pakistan	120.5	2.0	7.7	0.4	130.7	93.8%	34.1	87.0	17.6	0.1	138.7	24.6%
Philippines	70.7	0.0	6.9	2.2	79.8	88.6%	5.6	33.6	14.0	0.0	53.2	10.5%
Singapore	49.6	0.2	0.1	0.4	50.3	99.0%	1.4	0.0	0.9	0.0	2.3	60.7%
Sri Lanka	13.4	-	0.7	0.5	14.6	92.2%	0.6	6.7	3.0	-	10.3	6.1%
Thailand	210.8	0.0	17.4	13.0	241.2	87.4%	19.1	56.1	13.7	0.5	89.4	21.3%
Vietnam	79.8	1.1	14.9	9.9	105.7	76.5%	28.1	55.1	10.9	0.3	94.3	29.8%
Other Asia	15.4	0.6	0.4	68.7	85.0	18.8%	2.9	18.6	5.1	1.9	28.4	10.1%
Asia	2 614.8	33.2	147.8	2 797.0	5 592.9	47.3%	295.8	902.8	272.5	79.7	1 550.8	19.1%
People's Rep. of China	5 403.1	28.3	556.1	109.6	6 097.0	89.1%	606.0	516.9	201.6	3.3	1 327.8	45.6%
Hong Kong, China	40.8	1.5	0.4	0.1	42.8	98.8%	0.8	-	2.1	-	2.8	26.8%
China	5 443.9	29.7	556.5	109.7	6 139.8	89.2%	606.8	516.9	203.7	3.3	1 330.6	45.6%
Argentina	151.9	0.9	5.1	9.7	167.7	91.1%	17.9	71.9	8.7	1.5	100.0	17.9%
Bolivia	9.4	0.3	0.6	219.3	229.6	4.2%	7.2	10.4	1.3	10.9	29.8	24.1%
Brazil	322.7	4.2	19.2	1 462.7	1 808.7	18.1%	37.9	302.6	58.8	92.9	492.2	7.7%
Colombia	58.1	1.0	4.9	24.5	88.6	66.7%	11.1	39.6	6.5	0.5	57.7	19.3%
Costa Rica	5.7	-	0.6	0.1	6.3	89.7%	0.3	1.7	0.4	-	2.4	10.5%
Cuba	25.1	1.3	0.7	3.2	30.4	87.1%	0.9	5.9	2.5	-	9.3	9.4%
Dominican Republic	17.3	-	1.1	0.3	18.7	92.5%	1.1	3.9	1.7	-	6.7	16.2%
Ecuador	24.1	2.5	1.4	2.1	30.1	88.3%	3.4	9.9	1.8	0.1	15.1	22.2%
El Salvador	6.3	-	0.4	0.2	7.0	90.1%	0.4	1.7	1.1	-	3.2	13.0%
Guatemala	10.5	0.0	1.2	37.5	49.2	21.3%	1.1	4.1	1.5	1.7	8.4	12.6%
Haiti	2.0	-	0.2	0.0	2.2	89.0%	0.7	2.3	1.3	-	4.3	17.2%
Honduras	6.9	-	0.5	2.7	10.2	68.4%	0.4	4.1	0.7	-	5.2	7.5%
Jamaica	10.2	-	0.5	0.1	10.9	94.1%	0.2	0.7	0.5	-	1.3	11.7%
Netherlands Antilles	4.7	-	-	0.0	4.7	99.0%	0.1	0.0	0.1	-	0.1	55.6%
Nicaragua	4.0	-	0.2	0.4	4.7	85.9%	0.4	4.5	1.1	-	6.0	6.8%
Panama	6.8	-	0.4	0.4	7.6	89.2%	0.1	2.5	0.5	-	3.2	4.2%
Paraguay	3.4	-	0.3	20.5	24.2	14.2%	0.9	13.0	1.1	0.8	15.8	5.6%
Peru	28.9	0.2	2.0	11.4	42.5	68.4%	1.8	10.5	4.0	0.3	16.6	10.5%
Trinidad and Tobago	33.9	0.3	0.3	0.0	34.5	99.0%	9.4	0.1	1.3	0.2	11.1	85.3%
Uruguay	5.3	-	0.3	0.4	6.0	88.3%	0.5	18.4	0.8	0.0	19.8	2.5%
Venezuela	148.2	4.8	2.8	48.5	204.2	74.9%	25.2	24.6	5.6	2.1	57.5	43.9%
Other Non-OECD Americas	16.0	-	1.0	16.7	33.7	47.5%	0.2	2.5	2.7	0.2	5.7	3.6%
Non-OECD Americas	901.3	15.5	43.9	1 861.0	2 821.7	32.5%	121.0	534.9	104.1	111.4	871.4	13.9%
Bahrain	18.1	0.0	0.2	0.1	18.5	98.3%	2.5	0.0	0.3	0.0	2.8	88.7%
Islamic Rep. of Iran	421.6	21.8	15.9	0.7	460.1	96.4%	66.2	20.9	12.6	0.1	99.8	66.3%
Iraq	74.9	12.6	1.3	3.4	92.2	94.9%	14.0	3.0	3.7	0.0	20.6	67.9%
Jordan	18.0	-	1.7	0.0	19.7	91.3%	0.5	0.4	1.0	-	1.8	26.5%
Kuwait	70.1	4.4	0.9	0.1	75.5	98.7%	11.8	0.2	0.8	0.0	12.8	92.6%
Lebanon	14.5	-	1.9	0.0	16.5	88.0%	0.1	0.3	0.7	-	1.0	11.6%
Oman	28.2	4.7	1.2	20.0	54.1	60.8%	13.5	0.5	0.5	-	14.5	92.7%
Qatar	36.4	4.2	0.7	0.0	41.3	98.3%	18.0	0.1	0.5	0.0	18.6	96.8%
Saudi Arabia	325.3	7.3	11.3	0.3	344.2	96.6%	43.4	1.9	5.7	0.2	51.3	84.6%
Syrian Arab Republic	54.9	2.3	2.0	0.2	59.3	96.4%	6.2	3.5	2.3	0.0	11.9	51.7%
United Arab Emirates	108.4	1.9	4.1	0.1	114.5	96.3%	20.7	0.6	1.0	-	22.3	92.8%
Yemen	18.6	1.8	0.8	0.0	21.2	96.3%	2.2	3.7	1.9	-	7.8	28.6%
Middle East	1 189.1	60.9	41.9	25.1	1 317.0	94.9%	198.9	35.0	30.8	0.4	265.1	75.0%

2005 Greenhouse-gas emissions

million tonnes of CO₂ equivalent using GWP-100

Energy	N ₂ O					Share of energy	HFCs	PFCs	SF ₆	Total			GHG / GDP PPP *	
	Industrial processes	Agriculture	Other	Total	Industrial processes		Total	Share of energy	GHG / GDP PPP *					
1.6	-	17.8	2.1	21.5	7.4%	-	-	-	162.4	29.6%	0.99	Bangladesh		
0.0	-	0.1	0.6	0.7	1.7%	0.3	-	-	22.7	39.4%	1.29	Brunei Darussalam		
0.3	-	3.8	2.0	6.1	4.1%	-	-	-	60.2	6.7%	2.99	Cambodia		
1.3	0.7	1.7	1.4	5.1	25.9%	0.1	3.2	3.3	294.2	90.4%	0.48	Chinese Taipei		
26.0	1.8	156.3	27.2	211.2	12.3%	9.8	1.1	4.6	2 104.2	61.9%	0.84	India		
4.5	0.2	80.8	71.1	156.6	2.9%	-	0.1	0.9	2 829.0	14.0%	4.01	Indonesia		
0.5	-	2.1	0.8	3.4	13.7%	2.8	-	-	104.9	82.0%	0.98	DPR of Korea		
0.7	0.4	9.7	4.5	15.3	4.6%	0.0	0.3	0.6	328.3	53.9%	1.05	Malaysia		
0.1	-	3.3	0.2	3.5	3.4%	-	-	-	62.2	16.0%	8.53	Mongolia		
0.8	-	13.2	17.7	31.7	2.5%	-	-	-	508.6	4.2%	10.38	Myanmar		
0.6	-	3.5	0.5	4.5	13.1%	-	-	-	30.2	16.8%	1.16	Nepal		
3.3	0.7	19.9	3.2	27.1	12.2%	-	-	0.8	297.3	53.8%	0.87	Pakistan		
0.8	0.0	9.5	2.1	12.4	6.2%	-	-	0.4	145.7	52.9%	0.56	Philippines		
0.1	0.7	0.0	0.3	1.1	7.9%	1.4	0.8	0.3	56.2	91.2%	0.29	Singapore		
0.3	-	1.3	0.5	2.1	13.0%	-	-	-	26.9	53.1%	0.39	Sri Lanka		
4.5	0.5	14.6	3.0	22.6	20.1%	-	-	1.1	354.2	66.2%	0.80	Thailand		
1.4	-	19.1	2.3	22.8	6.1%	-	-	-	222.9	49.5%	1.25	Vietnam		
0.5	-	10.5	3.0	14.0	3.9%	0.1	-	-	127.4	15.2%	1.59	Other Asia		
47.2	5.0	367.1	142.4	561.7	8.4%	14.5	5.6	12.0	7 737.4	38.7%	1.27	Asia		
45.8	17.9	347.1	52.3	463.2	9.9%	146.7	10.6	29.0	8 074.2	75.3%	1.51	People's Rep. of China		
0.2	-	-	0.3	0.4	39.7%	-	-	0.1	46.2	93.6%	0.19	Hong Kong, China		
46.0	17.9	347.1	52.6	463.6	9.9%	146.7	10.6	29.1	8 120.4	75.4%	1.45	China		
1.7	0.2	44.4	3.7	50.0	3.4%	0.2	0.1	0.3	318.2	54.2%	0.76	Argentina		
0.1	-	5.5	9.7	15.3	0.7%	-	-	-	274.7	6.2%	7.96	Bolivia		
5.9	2.5	157.5	72.4	238.2	2.5%	1.8	5.6	1.2	2 547.8	14.5%	1.61	Brazil		
0.6	0.3	18.3	2.1	21.3	3.0%	-	0.0	0.1	167.7	42.3%	0.53	Colombia		
0.1	0.0	1.1	0.2	1.4	5.0%	0.1	-	-	10.2	58.8%	0.26	Costa Rica		
0.3	0.7	5.0	0.5	6.4	4.2%	0.1	-	-	46.2	59.7%	0.96	Cuba		
0.2	-	1.7	0.4	2.3	8.6%	-	-	-	27.7	67.0%	0.47	Dominican Republic		
0.2	-	3.9	0.5	4.6	3.8%	0.1	-	-	49.9	60.4%	0.57	Ecuador		
0.1	-	1.0	0.2	1.4	8.3%	0.1	-	-	11.6	58.6%	0.34	El Salvador		
0.3	-	3.0	2.1	5.4	5.6%	0.5	-	-	63.5	18.7%	1.23	Guatemala		
0.1	-	1.2	0.1	1.5	6.7%	-	-	-	7.9	35.4%	0.83	Haiti		
0.1	-	2.5	0.5	3.1	3.4%	-	-	-	18.4	40.3%	0.82	Honduras		
0.1	-	0.4	0.2	0.7	11.1%	0.1	-	-	12.9	81.2%	0.69	Jamaica		
0.0	-	0.0	0.0	0.1	17.7%	-	-	-	4.9	96.9%	2.18	Netherlands Antilles		
0.1	-	3.1	0.3	3.5	3.2%	-	-	-	14.2	32.0%	0.86	Nicaragua		
0.1	-	1.0	0.1	1.2	4.9%	-	-	-	12.1	58.1%	0.41	Panama		
0.2	-	7.4	1.5	9.0	1.8%	-	-	-	49.0	9.2%	2.13	Paraguay		
0.2	-	6.2	1.3	7.7	2.8%	0.3	-	-	67.1	46.3%	0.38	Peru		
0.0	-	0.1	0.1	0.3	11.7%	-	-	-	45.9	95.2%	1.74	Trinidad and Tobago		
0.1	-	6.8	0.1	7.0	1.5%	0.1	-	-	32.8	17.9%	1.03	Uruguay		
0.6	0.0	11.2	3.1	14.9	4.3%	0.7	0.3	0.2	277.9	64.3%	1.05	Venezuela		
0.1	-	2.4	0.8	3.3	3.7%	0.0	0.0	0.0	42.7	38.3%	1.05	Other Non-OECD Americas		
11.2	3.6	283.7	100.0	398.5	2.8%	4.0	6.0	1.9	4 103.5	25.6%	1.23	Non-OECD Americas		
0.0	-	0.0	0.1	0.1	27.2%	-	0.3	-	21.6	95.4%	1.06	Bahrain		
2.5	0.6	20.1	4.0	27.2	9.1%	-	0.1	2.4	589.5	86.9%	0.92	Islamic Rep. of Iran		
0.4	-	2.2	0.9	3.5	10.8%	-	-	0.1	116.4	87.6%	1.41	Iraq		
0.1	-	0.4	0.2	0.7	9.4%	0.1	-	-	22.3	83.1%	0.95	Jordan		
0.2	-	0.1	0.4	0.7	27.6%	0.5	-	0.4	89.8	96.3%	0.81	Kuwait		
0.1	-	0.4	0.2	0.6	12.9%	-	-	-	18.1	81.0%	0.47	Lebanon		
0.1	-	0.4	0.1	0.6	16.5%	0.2	-	-	69.4	67.0%	1.36	Oman		
0.1	-	0.0	0.1	0.3	29.2%	-	-	-	60.1	97.5%	1.05	Qatar		
1.0	-	3.0	2.5	6.4	14.8%	0.2	-	2.0	404.1	93.3%	0.82	Saudi Arabia		
0.3	0.3	4.3	0.7	5.5	4.8%	-	-	-	76.7	82.9%	1.00	Syrian Arab Republic		
0.2	-	0.5	0.7	1.4	16.7%	-	0.3	0.8	139.3	94.2%	0.51	United Arab Emirates		
0.4	-	2.4	0.5	3.3	12.3%	-	-	-	32.3	71.5%	0.70	Yemen		
5.2	0.9	33.7	10.4	50.2	10.4%	1.0	0.7	5.6	1 639.6	88.7%	0.86	Middle East		

* GHG / GDP PPP ratio is expressed in kg of CO₂-equivalent per 2005 USD. The high GHG / GDP PPP ratio for Mongolia is due to high levels of peat decay.

2010 Greenhouse-gas emissions

 million tonnes of CO₂ equivalent using GWP-100

	CO ₂						CH ₄					
	Fuel comb.	Fugitive	Industrial processes	Other	Total	Share of energy	Energy	Agricult.	Waste	Other	Total	Share of energy
World *	30 509.4	420.0	1 776.0	5 210.8	37 916.2	81.6%	2 980.4	3 389.5	1 291.9	151.6	7 813.4	38.1%
<i>Annex I Parties</i>	13 465.9	125.8	403.5	440.0	14 435.2	94.2%	972.3	639.9	446.4	3.9	2 062.5	47.1%
<i>Annex II Parties</i>	10 586.0	40.1	271.1	208.8	11 106.0	95.7%	409.9	520.2	287.8	3.2	1 221.1	33.6%
<i>North America</i>	5 957.3	19.2	67.8	43.0	6 087.3	98.2%	254.2	222.6	150.6	1.7	629.2	40.4%
<i>Europe</i>	3 063.6	17.1	125.5	145.0	3 351.3	91.9%	106.8	177.7	115.9	0.6	401.0	26.6%
<i>Asia Oceania</i>	1 565.0	3.8	77.8	20.8	1 667.5	94.1%	48.9	119.9	21.3	0.9	190.9	25.6%
<i>Annex I EIT</i>	2 611.6	82.8	102.3	230.8	3 027.5	89.0%	547.3	96.5	119.5	0.6	763.8	71.6%
<i>Non-Annex I Parties</i>	15 947.1	294.2	1 372.6	4 770.8	22 384.6	72.6%	2 006.4	2 749.6	845.6	147.7	5 749.3	34.9%
<i>Annex I Kyoto Parties</i>	7 703.1	108.4	311.9	362.5	8 485.9	92.1%	745.0	412.6	283.5	2.7	1 443.8	51.6%
Int. marine bunkers	643.9	-	-	-	643.9	100.0%	1.6	-	-	-	1.6	100%
Int. aviation bunkers	452.5	-	-	-	452.5	100.0%	0.1	-	-	-	0.1	100%
Non-OECD Total	16 903.0	361.0	1 409.1	4 935.8	23 608.8	73.1%	2 448.3	2 744.7	910.0	147.2	6 250.2	39.2%
OECD Total	12 510.0	58.9	367.0	275.0	13 211.0	95.1%	530.4	644.8	382.0	4.4	1 561.6	34.0%
Canada	528.0	4.7	9.3	7.3	549.3	97.0%	43.2	27.0	33.7	0.5	104.5	41.3%
Chile	69.8	0.4	2.4	0.2	72.8	96.4%	4.3	7.9	5.6	0.2	18.0	24.0%
Mexico	417.9	4.2	16.8	31.3	470.3	89.8%	40.3	55.4	19.4	0.8	115.9	34.8%
United States	5 429.4	14.5	58.4	35.7	5 537.9	98.3%	211.1	195.6	116.9	1.1	524.7	40.2%
OECD Americas	6 445.0	23.8	86.9	74.6	6 630.3	97.6%	298.9	285.9	175.6	2.7	763.0	39.2%
Australia	396.0	1.3	7.6	12.2	417.2	95.2%	44.1	65.0	12.9	0.6	122.5	36.0%
Israel	68.1	0.1	2.3	0.1	70.5	96.6%	1.1	1.1	1.1	-	3.4	32.3%
Japan	1 138.0	2.4	69.6	4.5	1 214.6	93.9%	3.3	29.5	7.2	0.3	40.3	8.1%
Korea	564.5	6.3	22.4	0.0	593.1	96.2%	7.3	13.2	11.4	0.1	32.0	22.8%
New Zealand	31.0	0.1	0.6	4.1	35.7	87.1%	1.5	25.4	1.2	0.0	28.1	5.3%
OECD Asia Oceania	2 197.5	10.2	102.5	20.9	2 331.1	94.7%	57.2	134.2	33.8	1.0	226.3	25.3%
Austria	70.1	0.2	4.0	0.3	74.5	94.2%	2.1	4.0	2.2	0.0	8.4	25.6%
Belgium	108.0	0.3	5.1	0.3	113.7	95.2%	1.5	5.5	2.6	0.0	9.6	15.8%
Czech Republic	114.4	3.3	4.5	0.5	122.6	95.9%	5.2	3.4	3.4	0.0	12.0	43.4%
Denmark	47.0	0.2	1.8	2.7	51.7	91.2%	1.2	5.2	1.3	-	7.8	15.5%
Estonia	18.5	0.8	0.6	9.2	29.1	66.2%	1.0	0.6	0.7	-	2.3	42.8%
Finland	63.2	0.4	1.0	50.7	115.4	55.2%	0.9	1.9	6.0	0.0	8.9	10.4%
France	356.7	2.5	22.4	2.8	384.4	93.4%	36.1	35.2	12.3	0.1	83.8	43.1%
Germany	769.0	4.3	19.1	31.4	823.7	93.9%	14.8	28.6	13.7	0.2	57.2	25.9%
Greece	84.2	0.0	7.7	0.1	92.0	91.5%	1.7	3.6	3.1	0.0	8.4	19.8%
Hungary	48.9	0.5	2.3	0.7	52.4	94.3%	2.2	2.3	2.8	0.0	7.3	30.8%
Iceland	1.9	-	0.1	17.6	19.6	9.9%	0.0	0.2	0.2	0.0	0.4	0.8%
Ireland	38.9	-	2.7	8.0	49.6	78.4%	2.1	10.9	0.9	0.0	13.9	14.9%
Italy	398.5	1.9	21.6	0.4	422.4	94.8%	7.0	15.6	15.0	0.0	37.5	18.5%
Luxembourg	10.6	-	0.5	0.0	11.0	95.6%	0.1	1.0	0.1	0.0	1.2	11.4%
Netherlands	187.0	0.7	1.1	5.4	194.2	96.7%	5.7	9.7	4.9	0.0	20.3	27.9%
Norway	39.4	0.6	1.5	1.0	42.5	94.0%	13.1	2.1	1.9	0.1	17.1	76.3%
Poland	305.6	0.0	10.2	23.3	339.2	90.1%	41.7	15.1	8.6	0.0	65.5	63.8%
Portugal	48.1	0.1	4.3	0.1	52.5	91.8%	1.5	4.1	6.9	0.0	12.6	12.0%
Slovak Republic	35.2	0.5	2.8	0.2	38.7	92.3%	0.9	1.3	1.7	0.0	4.0	23.8%
Slovenia	15.3	-	1.6	0.2	17.1	89.5%	1.2	1.0	0.6	0.0	2.9	42.2%
Spain	267.9	0.6	18.8	0.1	287.4	93.4%	3.2	20.0	13.5	0.1	36.8	8.8%
Sweden	47.2	1.2	2.0	14.4	64.8	74.7%	1.3	3.1	6.4	0.0	10.8	12.0%
Switzerland	43.8	0.0	2.1	0.3	46.3	94.8%	1.2	3.1	0.7	0.0	5.0	23.0%
Turkey	265.9	2.9	30.1	0.3	299.2	89.8%	15.2	23.2	38.9	0.0	77.3	19.6%
United Kingdom	482.2	4.1	9.8	9.5	505.5	96.2%	13.3	23.7	24.2	0.0	61.2	21.7%
OECD Europe	3 867.5	25.0	177.6	179.5	4 249.5	91.6%	174.3	224.7	172.6	0.7	572.3	30.5%
<i>European Union - 27</i>	3 667.4	22.2	156.4	171.6	4 017.6	91.8%	162.4	209.1	147.5	0.7	519.8	31.2%

* Total World includes Non-OECD total, OECD total as well as international bunkers.

 Sources: IEA, Sectoral Approach for CO₂ emissions from fuel combustion. EDGAR 4.2 FT2010 database for other emissions. In general, estimates for emissions other than CO₂ from fuel combustion are subject to significantly larger uncertainties.

2010 Greenhouse-gas emissions

million tonnes of CO₂ equivalent using GWP-100

Energy	N ₂ O					Share of energy	HFCs	PFCs	SF ₆	Total			GHG / GDP PPP *	
	Industrial processes	Agriculture	Other	Total	Industrial processes		Total	Share of energy						
291.6	115.1	2 166.5	510.9	3 084.1	9.5%	776.2	72.7	166.8	49 829.5	68.6%	0.74	World		
126.4	82.8	515.3	113.3	837.9	15.1%	535.4	46.1	72.7	17 989.7	81.7%	0.49	Annex I Parties		
106.8	47.5	396.6	88.3	639.1	16.7%	489.0	24.1	60.4	13 539.8	82.3%	0.43	Annex II Parties		
69.9	25.3	199.2	42.7	337.1	20.7%	322.5	10.6	45.3	7 431.8	84.8%	0.52	North America		
25.9	17.5	137.3	32.8	213.5	12.1%	97.0	6.1	10.8	4 079.7	78.8%	0.32	Europe		
11.1	4.6	60.1	12.7	88.5	12.5%	69.5	7.5	4.3	2 028.3	80.3%	0.42	Asia Oceania		
16.5	33.2	93.0	21.1	163.8	10.1%	41.5	21.4	10.3	4 028.4	80.9%	0.97	Annex I EIT		
156.2	32.4	1 651.2	397.6	2 237.4	7.0%	240.9	26.7	94.1	30 732.9	59.9%	1.00	Non-Annex I Parties		
59.4	53.2	302.1	70.7	485.4	12.2%	229.1	39.1	29.6	10 712.9	80.4%	0.47	Annex I Kyoto Parties		
4.9	-	-	-	4.9	100%	-	-	-	650.4	100.0%	..	Int. marine bunkers		
4.0	-	-	-	4.0	100%	-	-	-	456.6	100.0%	..	Int. aviation bunkers		
157.9	60.3	1 668.0	403.0	2 289.2	6.9%	259.7	45.6	96.7	32 550.2	61.0%	1.06	Non-OECD Total		
124.7	54.9	498.5	107.9	786.0	15.9%	516.5	27.1	70.1	16 172.3	81.8%	0.43	OECD Total		
6.6	0.7	21.0	4.6	33.0	20.1%	21.6	4.2	4.1	716.7	81.3%	0.60	Canada		
0.6	0.7	6.5	1.0	8.8	6.6%	-	-	0.0	99.6	75.4%	0.40	Chile		
3.7	0.6	32.5	6.3	43.1	8.6%	8.5	0.0	0.5	638.3	73.0%	0.45	Mexico		
63.2	24.6	178.2	38.1	304.1	20.8%	300.9	6.4	41.2	6 715.2	85.2%	0.52	United States		
74.1	26.6	238.2	50.1	389.0	19.1%	331.0	10.6	45.8	8 169.7	83.7%	0.52	OECD Americas		
3.7	2.0	41.9	3.9	51.5	7.2%	8.0	0.6	0.5	600.3	74.2%	0.73	Australia		
0.3	0.0	0.9	0.6	1.7	16.6%	2.0	0.1	0.7	78.4	88.6%	0.39	Israel		
7.1	2.6	7.5	8.5	25.7	27.5%	60.3	6.7	3.8	1 351.3	85.2%	0.34	Japan		
3.8	1.1	6.6	3.2	14.7	25.6%	2.8	1.8	6.2	650.7	89.4%	0.49	Korea		
0.3	-	10.8	0.3	11.3	2.5%	1.2	0.2	0.1	76.6	42.9%	0.70	New Zealand		
15.1	5.8	67.6	16.4	104.9	14.4%	74.3	9.4	11.2	2 757.3	82.7%	0.43	OECD Asia Oceania		
0.7	0.1	2.2	0.8	3.8	19.4%	2.8	0.2	0.2	90.0	81.3%	0.30	Austria		
0.7	5.4	2.8	1.2	10.1	7.0%	2.7	0.0	0.1	136.3	81.1%	0.38	Belgium		
1.5	0.5	4.5	0.8	7.3	20.0%	3.6	0.0	0.0	145.6	85.4%	0.59	Czech Republic		
0.6	-	4.3	0.6	5.4	10.4%	1.7	0.0	0.0	66.6	73.4%	0.37	Denmark		
0.1	-	0.6	0.2	0.9	15.0%	0.1	0.0	0.0	32.4	62.9%	1.44	Estonia		
2.4	0.2	2.6	0.7	5.8	41.5%	1.2	0.0	0.1	131.4	51.0%	0.78	Finland		
3.5	1.8	29.0	4.3	38.7	9.2%	18.9	0.4	1.4	527.6	75.6%	0.27	France		
5.6	3.6	27.7	5.6	42.4	13.1%	19.8	0.9	5.3	949.4	83.6%	0.35	Germany		
0.7	0.4	3.1	0.9	5.1	13.7%	1.2	0.1	0.1	106.9	80.9%	0.39	Greece		
0.3	0.0	3.3	0.6	4.2	7.4%	1.7	0.0	0.0	65.7	79.1%	0.39	Hungary		
0.0	0.0	0.3	0.0	0.4	3.8%	0.1	0.1	0.0	20.6	9.5%	1.97	Iceland		
0.3	-	7.0	0.4	7.7	3.7%	1.2	0.0	0.1	72.5	56.9%	0.44	Ireland		
3.1	0.9	10.6	5.0	19.6	15.9%	14.1	0.5	1.0	495.1	82.9%	0.30	Italy		
0.1	-	0.3	0.1	0.5	17.1%	0.1	0.0	-	12.9	83.6%	0.37	Luxembourg		
0.8	1.6	5.6	1.2	9.2	8.8%	4.6	0.3	0.2	228.7	84.9%	0.37	Netherlands		
0.3	0.4	1.8	0.8	3.3	10.2%	0.5	1.2	0.2	64.8	82.4%	0.28	Norway		
4.0	1.5	18.7	2.6	26.8	15.0%	2.0	0.3	0.3	433.9	81.0%	0.66	Poland		
0.5	0.4	2.5	0.9	4.3	11.5%	1.1	0.0	0.2	70.6	71.0%	0.30	Portugal		
0.4	0.9	1.7	0.3	3.4	12.2%	1.5	0.1	-	47.7	77.8%	0.44	Slovak Republic		
0.1	-	0.9	0.2	1.2	11.5%	0.5	0.1	0.0	21.8	76.5%	0.42	Slovenia		
2.4	0.7	15.1	4.3	22.6	10.8%	10.0	1.2	0.9	358.9	76.4%	0.29	Spain		
1.2	0.5	3.1	0.8	5.6	22.0%	1.6	0.4	0.2	83.4	61.0%	0.26	Sweden		
0.4	0.2	1.4	0.5	2.4	16.2%	2.3	0.1	0.4	56.4	80.5%	0.18	Switzerland		
3.1	2.1	25.7	3.9	34.9	9.0%	4.7	0.5	2.0	418.6	68.6%	0.46	Turkey		
2.4	1.4	17.9	4.8	26.5	9.2%	13.3	0.5	0.6	607.5	82.6%	0.30	United Kingdom		
35.5	22.5	192.7	41.5	292.1	12.1%	111.2	7.1	13.1	5 245.3	78.2%	0.35	OECD Europe		
32.7	21.9	177.8	38.4	270.7	12.1%	108.2	5.4	10.6	4 932.3	78.8%	0.35	European Union - 27		

* GHG / GDP PPP ratio is expressed in kg of CO₂-equivalent per 2005 USD.

2010 Greenhouse-gas emissions

 million tonnes of CO₂ equivalent using GWP-100

	CO ₂						CH ₄					
	Fuel comb.	Fugitive	Industrial processes	Other	Total	Share of energy	Energy	Agricult.	Waste	Other	Total	Share of energy
Non-OECD Total	16 903.0	361.0	1 409.1	4 935.8	23 608.8	73.1%	2 448.3	2 744.7	910.0	147.2	6 250.2	39.2%
Albania	3.7	-	0.4	0.6	4.6	79.6%	0.8	1.6	0.2	0.0	2.6	30.0%
Armenia	4.0	-	0.4	0.1	4.6	88.7%	2.0	1.1	0.3	-	3.3	59.5%
Azerbaijan	23.8	0.2	0.8	0.1	25.0	96.3%	10.9	5.7	1.8	0.0	18.4	59.5%
Belarus	65.1	0.0	3.0	41.5	109.7	59.4%	1.0	8.5	6.9	0.0	16.4	6.4%
Bosnia-Herzegovina	20.0	0.3	0.7	0.3	21.3	95.4%	1.4	1.3	0.3	-	3.1	47.2%
Bulgaria	44.4	0.0	3.5	0.2	48.0	92.4%	1.6	1.8	8.7	0.0	12.0	12.9%
Croatia	19.0	0.0	3.3	0.0	22.3	85.1%	2.4	1.3	1.3	0.0	5.0	47.4%
Cyprus *	7.2	-	0.8	-	8.1	89.6%	0.0	0.2	0.4	-	0.6	2.1%
Georgia	4.9	0.0	0.2	0.2	5.4	92.3%	2.0	2.4	0.5	0.0	4.9	40.8%
Gibraltar	0.5	-	0.0	-	0.5	99.8%	0.0	-	0.0	-	0.0	4.7%
Kazakhstan	233.7	12.2	4.7	0.1	250.6	98.1%	45.7	14.7	5.5	1.7	67.5	67.6%
Kosovo **	8.6	..	..	..	..	..	..	..	..	..	..	..
Kyrgyzstan	6.3	-	0.6	0.4	7.3	86.0%	0.3	3.0	0.7	-	4.0	6.7%
Latvia	8.1	-	0.2	4.1	12.4	65.2%	1.8	0.8	0.6	0.0	3.2	57.2%
Lithuania	13.3	0.0	0.6	6.0	20.0	66.7%	1.8	1.8	1.4	0.0	5.1	35.0%
FYR of Macedonia	8.2	-	0.4	0.0	8.6	95.0%	0.5	0.6	0.3	0.0	1.4	33.6%
Malta	2.5	-	0.0	-	2.5	99.7%	0.0	0.0	0.2	-	0.2	0.3%
Republic of Moldova	7.9	-	0.4	0.0	8.3	95.4%	1.8	0.8	0.8	-	3.4	53.9%
Montenegro **	2.5	..	..	..	..	..	..	..	..	..	..	..
Romania	75.5	0.7	7.5	1.0	84.7	90.0%	12.3	8.5	5.3	0.0	26.1	47.1%
Russian Federation	1 576.6	64.7	45.8	139.3	1 826.4	89.9%	426.0	40.6	66.6	0.4	533.5	79.8%
Serbia **	45.8	-	1.5	0.6	47.9	95.6%	3.1	2.4	1.0	0.0	6.6	47.5%
Tajikistan	2.9	-	0.2	-	3.0	95.0%	0.5	3.6	0.8	-	4.9	10.9%
Turkmenistan	56.6	2.2	0.4	0.3	59.5	98.8%	19.5	6.1	1.0	-	26.5	73.4%
Ukraine	271.6	12.3	16.4	4.6	304.9	93.1%	48.0	9.5	10.8	0.1	68.4	70.2%
Uzbekistan	101.4	3.2	3.2	1.1	108.9	96.1%	25.6	17.4	3.8	-	46.9	54.6%
Non-OECD Europe and Eurasia	2 614.2	95.8	95.0	200.4	3 005.5	90.2%	609.0	133.6	119.3	2.3	864.2	70.5%
Algeria	97.8	10.6	7.7	0.0	116.1	93.3%	37.5	4.9	5.3	0.0	47.7	78.6%
Angola	15.7	7.2	0.6	7.4	30.9	74.1%	11.9	4.2	2.3	0.2	18.6	64.1%
Benin	4.5	-	0.7	30.8	36.0	12.5%	1.0	3.0	1.1	1.7	6.8	14.8%
Botswana	5.0	-	0.1	0.4	5.5	90.7%	0.5	3.5	0.3	0.0	4.4	11.1%
Cameroon	5.0	1.6	0.4	42.5	49.6	13.4%	2.6	11.6	2.2	1.8	18.2	14.4%
Congo	1.8	3.3	-	27.4	32.5	15.7%	3.9	1.6	0.6	0.8	7.0	55.4%
Dem. Rep. of Congo	3.1	-	0.2	969.0	972.4	0.3%	6.6	18.4	6.5	42.3	73.9	8.9%
Côte d'Ivoire	6.2	0.2	0.3	133.3	140.0	4.5%	3.5	2.4	1.9	8.2	15.9	22.2%
Egypt	178.4	2.7	19.6	0.0	200.7	90.2%	29.7	13.3	8.0	0.0	51.0	58.3%
Eritrea	0.5	-	0.0	-	0.5	95.6%	0.6	1.8	0.4	-	2.8	20.5%
Ethiopia	5.5	-	0.8	0.5	6.8	80.1%	10.7	44.6	7.9	-	63.2	16.9%
Gabon	2.2	3.0	0.1	11.3	16.5	31.1%	2.4	0.2	0.4	0.8	3.8	63.8%
Ghana	10.3	-	0.8	38.1	49.2	20.9%	3.1	11.8	2.9	2.9	20.7	15.1%
Kenya	11.5	-	1.6	4.2	17.3	66.2%	8.1	14.8	4.5	-	27.5	29.6%
Libya	55.6	6.7	2.8	0.0	65.1	95.6%	16.0	0.9	1.1	0.0	18.1	88.5%
Morocco	46.1	-	4.9	0.0	51.0	90.4%	1.6	5.8	4.3	0.0	11.8	13.9%
Mozambique	2.5	-	0.3	14.5	17.4	14.4%	4.9	2.1	2.8	0.0	9.8	50.5%
Namibia	3.1	-	0.0	0.0	3.2	98.7%	0.1	4.6	0.3	-	5.0	2.7%
Nigeria	51.9	26.6	2.2	23.8	104.5	75.1%	36.1	35.7	14.8	1.5	88.0	41.0%
Senegal	5.6	-	1.4	0.0	7.0	79.4%	1.8	6.2	1.7	-	9.7	19.0%
South Africa	370.6	12.8	6.9	0.6	390.9	98.1%	29.8	20.1	13.1	2.3	65.3	45.7%
Sudan	15.3	-	0.1	4.0	19.4	78.6%	7.2	81.2	6.3	-	94.6	7.6%
United Rep. of Tanzania	5.8	0.1	0.7	24.3	30.9	19.1%	7.0	15.7	4.6	0.1	27.4	25.4%
Togo	1.2	-	0.4	12.3	13.8	8.5%	1.7	2.0	0.8	0.8	5.2	32.6%
Tunisia	21.9	0.6	3.6	0.0	26.1	86.3%	4.5	2.2	0.8	0.0	7.5	60.0%
Zambia	1.7	-	0.4	59.4	61.6	2.8%	2.6	2.5	1.4	-	6.4	40.1%
Zimbabwe	8.7	0.4	0.2	1.0	10.2	88.3%	1.1	5.8	1.6	0.0	8.4	12.9%
Other Africa	29.7	2.0	1.3	570.2	603.2	5.3%	31.5	170.1	19.5	35.3	256.4	12.3%
Africa	967.2	77.5	58.4	1 975.3	3 078.4	33.9%	268.2	490.7	117.5	98.9	975.3	27.5%

* Please refer to Part I, Chapter 4, Geographical Coverage.

 ** For 2010, Serbia includes Kosovo and Montenegro for all emissions other than C₀₂ from fuel combustion.

2010 Greenhouse-gas emissions

million tonnes of CO₂ equivalent using GWP-100

Energy	N ₂ O					Share of energy	HFCs	PFCs	SF ₆	Total			GHG / GDP PPP *	
	Industrial processes	Agriculture	Other	Total	Industrial processes		Total	Share of energy						
157.9	60.3	1 668.0	403.0	2 289.2	6.9%	259.7	45.6	96.7	32 550.2	61.0%	1.06	Non-OECD Total		
0.1	-	0.9	0.1	1.1	6.1%	0.1	-	-	8.5	53.7%	0.34	Albania		
0.0	-	0.9	0.1	1.0	2.3%	0.6	-	-	9.4	64.1%	0.62	Armenia		
0.1	-	2.1	0.4	2.6	5.1%	0.1	0.2	-	46.3	75.9%	0.57	Azerbaijan		
0.7	2.8	9.3	0.6	13.4	5.3%	0.5	0.0	-	140.1	47.7%	1.18	Belarus		
0.1	-	0.8	0.2	1.1	11.7%	0.8	0.1	-	26.4	83.1%	0.94	Bosnia-Herzegovina		
0.3	0.5	3.2	0.5	4.5	6.4%	0.6	0.0	-	65.2	70.9%	0.75	Bulgaria		
0.2	0.9	1.6	0.3	2.9	6.5%	0.1	0.0	-	30.4	71.0%	0.43	Croatia		
0.0	-	0.2	0.1	0.3	11.5%	0.3	-	-	9.3	78.2%	0.45	Cyprus		
0.1	0.8	1.2	0.2	2.3	3.0%	0.0	-	-	12.5	55.9%	0.62	Georgia		
0.0	-	-	0.0	0.0	37.5%	-	-	-	0.6	97.5%	0.65	Gibraltar		
1.4	-	12.3	3.8	17.5	7.8%	0.6	-	-	336.2	87.1%	1.89	Kazakhstan		
..	..	..	..	..	..	..	..	..	..	..	..	Kosovo
0.0	-	1.2	0.2	1.5	1.8%	0.0	-	-	12.8	51.4%	1.16	Kyrgyzstan		
0.2	-	1.0	0.2	1.4	12.0%	1.3	0.0	-	18.4	55.0%	0.63	Latvia		
0.1	0.5	3.8	0.2	4.6	2.5%	1.3	0.0	-	30.9	49.2%	0.61	Lithuania		
0.0	-	0.4	0.1	0.5	8.7%	0.2	-	-	10.7	81.3%	0.57	FYR of Macedonia		
0.0	-	0.0	0.0	0.1	8.9%	0.2	-	-	2.9	84.0%	0.31	Malta		
0.1	-	0.5	0.1	0.6	8.7%	0.0	-	-	12.4	79.4%	1.24	Republic of Moldova		
..	..	..	..	..	..	..	..	..	..	..	..	Montenegro
0.5	1.1	6.0	1.1	8.8	6.0%	0.8	0.2	0.0	120.6	73.8%	0.52	Romania		
6.8	17.0	28.8	11.1	63.7	10.7%	26.9	20.6	9.6	2 480.8	83.6%	1.23	Russian Federation		
0.3	0.2	6.5	0.5	7.4	4.0%	7.2	0.1	-	69.2	71.1%	0.99	Serbia		
0.0	-	1.5	0.2	1.7	1.2%	0.0	0.3	-	10.0	34.2%	0.75	Tajikistan		
0.1	0.9	3.7	0.3	5.0	1.8%	0.1	-	-	91.1	86.0%	2.46	Turkmenistan		
1.2	7.5	9.5	2.4	20.7	5.9%	0.4	0.1	0.4	395.0	84.4%	1.43	Ukraine		
0.3	0.1	10.5	1.1	12.0	2.8%	1.0	-	-	168.7	77.4%	2.15	Uzbekistan		
12.7	32.3	105.9	23.8	174.7	7.3%	43.2	21.8	10.0	4 119.4	80.9%	1.17	Non-OECD Europe and Eurasia		
0.5	1.6	3.1	1.1	6.3	8.0%	0.3	-	0.4	170.8	85.7%	0.64	Algeria		
0.2	-	2.9	0.5	3.6	6.2%	0.0	-	-	53.1	66.0%	0.54	Angola		
0.1	-	2.9	1.7	4.8	2.9%	-	-	-	47.6	11.9%	3.78	Benin		
0.1	-	2.1	0.1	2.2	2.7%	-	-	-	12.1	46.1%	0.48	Botswana		
0.3	-	10.6	2.8	13.6	1.8%	-	0.4	-	81.7	11.6%	2.04	Cameroon		
0.1	-	1.6	1.3	2.9	2.9%	0.0	-	-	42.4	21.4%	2.75	Congo		
1.4	-	21.3	43.9	66.6	2.1%	-	-	-	1 112.9	1.0%	53.31	Dem. Rep. of Congo		
0.2	-	2.7	6.9	9.8	2.4%	-	-	-	165.8	6.1%	4.96	Côte d'Ivoire		
1.7	5.7	14.9	2.4	24.6	6.8%	0.5	1.9	1.5	280.1	75.8%	0.62	Egypt		
0.1	-	1.1	0.1	1.2	6.0%	-	-	-	4.6	24.7%	1.78	Eritrea		
1.8	-	34.2	3.1	39.1	4.6%	0.0	-	-	109.1	16.5%	1.41	Ethiopia		
0.0	-	0.2	0.6	0.8	5.3%	0.0	-	-	21.2	36.0%	1.03	Gabon		
0.5	-	13.0	3.8	17.2	2.9%	0.0	-	-	87.1	16.0%	2.42	Ghana		
0.7	-	9.9	0.8	11.4	6.0%	-	-	-	56.2	36.1%	0.93	Kenya		
0.2	-	0.7	0.6	1.4	12.3%	-	-	0.4	85.0	92.3%	0.86	Libya		
0.7	-	4.1	1.1	5.9	11.4%	-	-	-	68.7	70.5%	0.50	Morocco		
0.4	-	1.1	0.7	2.2	16.0%	0.1	0.2	-	29.7	26.2%	1.54	Mozambique		
0.1	-	2.8	0.1	3.0	4.5%	-	-	-	11.1	30.4%	0.83	Namibia		
1.9	-	28.1	5.5	35.5	5.2%	0.6	0.0	0.4	229.0	50.8%	0.68	Nigeria		
0.1	-	5.7	0.6	6.4	2.3%	-	-	-	23.2	32.7%	1.07	Senegal		
2.2	0.0	14.1	5.6	21.9	10.2%	0.8	0.5	1.9	481.3	86.3%	1.01	South Africa		
0.7	-	72.1	10.5	83.3	0.8%	-	-	-	197.4	11.7%	2.25	Sudan		
0.7	-	10.7	1.6	12.9	5.2%	-	-	-	71.3	19.0%	1.27	United Rep. of Tanzania		
0.1	-	2.0	0.8	3.0	5.0%	-	-	-	22.1	13.8%	4.06	Togo		
0.2	0.3	2.1	0.3	2.9	7.0%	-	-	-	36.5	74.6%	0.41	Tunisia		
0.2	0.3	5.4	2.3	8.2	2.8%	0.0	-	-	76.2	6.0%	4.21	Zambia		
0.2	-	3.7	0.2	4.2	5.6%	-	-	-	22.8	45.3%	6.60	Zimbabwe		
3.6	-	149.6	41.6	194.7	1.8%	0.2	-	-	1 054.5	6.3%	4.30	Other Africa		
19.0	7.9	422.5	140.3	589.7	3.2%	2.6	3.0	4.6	4 653.4	28.6%	1.68	Africa		

* GHG / GDP PPP ratio is expressed in kg of CO₂-equivalent per 2005 USD. The high GHG / GDP PPP ratio for DR of Congo and Zambia is due to high levels of forest fires and subsequent post-burn decay.

2010 Greenhouse-gas emissions

 million tonnes of CO₂ equivalent using GWP-100

	CO ₂						CH ₄					
	Fuel comb.	Fugitive	Industrial processes	Other	Total	Share of energy	Energy	Agricult.	Waste	Other	Total	Share of energy
Bangladesh	53.3	0.2	2.4	5.4	61.3	87.4%	12.4	70.4	20.3	0.0	103.1	12.0%
Brunei Darussalam	7.9	0.3	0.1	5.5	13.8	59.3%	4.3	0.0	0.1	-	4.5	97.3%
Cambodia	3.8	-	0.0	138.6	142.3	2.6%	1.4	21.4	1.9	10.5	35.2	4.0%
Chinese Taipei	270.2	1.3	8.6	-	280.1	96.9%	1.4	1.2	6.3	0.0	8.9	16.0%
India	1 710.4	32.7	120.1	36.1	1 899.4	91.8%	116.1	377.6	125.3	2.5	621.5	18.7%
Indonesia	410.1	4.2	17.8	1 182.7	1 614.7	25.7%	68.2	94.3	56.2	0.3	218.9	31.1%
DPR of Korea	63.8	-	2.9	2.5	69.2	92.2%	10.9	4.4	3.4	0.0	18.6	58.5%
Malaysia	183.4	2.6	9.2	78.2	273.4	68.0%	21.6	5.5	5.9	0.5	33.6	64.4%
Mongolia	12.6	0.1	0.1	47.0	59.8	21.2%	1.0	4.8	0.3	0.0	6.1	16.4%
Myanmar	8.0	0.1	0.3	243.2	251.6	3.2%	10.7	59.3	7.2	1.9	79.1	13.5%
Nepal	4.1	-	0.1	0.2	4.4	91.9%	1.5	19.2	2.8	0.0	23.5	6.4%
Pakistan	135.4	2.2	12.7	0.1	150.3	91.5%	40.5	95.0	19.8	0.0	155.2	26.1%
Philippines	76.6	0.1	6.1	1.0	83.8	91.5%	6.1	34.7	15.2	0.0	56.0	10.9%
Singapore	64.3	0.2	0.3	0.1	64.9	99.3%	1.3	0.0	1.0	0.0	2.3	57.5%
Sri Lanka	13.1	-	0.8	0.2	14.2	92.4%	0.6	7.8	3.3	-	11.6	5.0%
Thailand	236.2	-	13.3	36.7	286.2	82.5%	23.2	64.2	14.2	2.7	104.4	22.3%
Vietnam	129.4	0.9	22.2	8.9	161.4	80.8%	40.9	58.0	12.1	0.2	111.3	36.8%
Other Asia	22.1	0.1	0.5	115.9	138.5	16.0%	3.3	20.4	6.0	6.1	35.8	9.3%
Asia	3 404.7	44.9	217.4	1 902.2	5 569.2	61.9%	365.5	938.2	301.3	24.8	1 629.8	22.4%
People's Rep. of China	7 252.6	68.7	918.5	73.7	8 313.6	88.1%	819.3	589.9	229.2	3.9	1 642.3	49.9%
Hong Kong, China	41.5	1.3	0.5	-	43.3	98.9%	0.8	-	2.3	-	3.1	24.6%
China	7 294.1	70.0	919.0	73.7	8 356.9	88.1%	820.1	589.9	231.5	3.9	1 645.3	49.8%
Argentina	177.9	0.8	5.6	3.4	187.7	95.2%	15.8	62.6	7.9	0.4	86.7	18.3%
Bolivia	14.1	0.1	0.7	97.2	112.1	12.7%	10.3	10.6	1.4	0.5	22.8	45.1%
Brazil	388.5	3.0	27.6	523.7	942.9	41.5%	43.3	327.2	62.8	10.0	443.3	9.8%
Colombia	62.2	1.2	5.2	22.9	91.5	69.3%	13.6	43.8	6.5	2.8	66.7	20.4%
Costa Rica	6.5	-	0.6	0.0	7.2	91.3%	0.3	1.5	0.5	-	2.3	11.4%
Cuba	29.4	1.5	0.8	3.1	34.7	88.9%	0.8	5.1	2.5	-	8.4	9.9%
Dominican Republic	18.2	-	1.7	0.1	20.0	91.1%	0.8	4.0	2.0	-	6.7	11.6%
Ecuador	31.0	3.1	1.6	0.7	36.5	93.5%	3.4	10.3	1.7	0.0	15.5	22.2%
El Salvador	5.8	-	0.5	0.1	6.5	90.5%	0.4	1.6	1.0	-	3.0	12.5%
Guatemala	10.3	-	1.3	20.0	31.6	32.6%	1.7	3.5	1.5	0.1	6.7	24.7%
Haiti	2.0	-	0.2	0.0	2.3	90.5%	0.9	2.2	1.4	-	4.5	19.2%
Honduras	7.3	-	0.7	2.4	10.4	69.9%	0.5	4.4	0.9	-	5.7	8.3%
Jamaica	7.2	-	0.4	0.1	7.7	93.3%	0.1	0.6	0.5	-	1.3	9.9%
Netherlands Antilles	4.3	-	-	-	4.3	100.0%	0.1	0.0	0.1	-	0.1	51.3%
Nicaragua	4.5	-	0.2	0.4	5.1	87.4%	0.4	4.7	1.3	-	6.4	6.6%
Panama	8.4	-	0.4	0.4	9.2	90.9%	0.1	2.7	0.5	-	3.3	3.7%
Paraguay	4.7	-	0.3	11.6	16.6	28.2%	1.4	13.2	1.3	0.1	15.9	8.7%
Peru	41.8	0.1	2.9	6.6	51.3	81.5%	3.9	11.5	3.5	0.0	18.9	20.6%
Trinidad and Tobago	42.8	0.1	0.4	0.0	43.3	99.2%	12.6	0.1	1.5	0.4	14.5	86.6%
Uruguay	6.4	-	0.3	0.4	7.1	90.7%	0.7	17.8	0.7	0.0	19.2	3.6%
Venezuela	181.6	5.7	3.9	48.7	239.9	78.0%	23.9	25.8	5.5	1.9	57.1	41.8%
Other Non-OECD Americas	18.8	-	0.4	16.7	35.9	52.4%	0.2	2.6	1.1	0.4	4.3	5.1%
Non-OECD Americas	1 073.8	15.7	55.8	758.7	1 903.9	57.2%	135.1	555.7	105.9	16.7	813.4	16.6%
Bahrain	23.1	-	0.2	-	23.2	99.3%	3.0	0.0	0.2	0.0	3.3	91.9%
Islamic Rep. of Iran	508.0	20.5	23.6	0.2	552.4	95.7%	79.4	21.6	14.0	0.3	115.3	68.9%
Iraq	101.3	16.0	2.5	3.3	123.1	95.3%	16.6	3.2	4.1	0.0	23.9	69.4%
Jordan	18.8	-	1.9	-	20.7	90.8%	0.8	0.4	0.9	-	2.1	38.9%
Kuwait	81.5	2.6	1.0	-	85.1	98.8%	11.4	0.2	0.9	0.0	12.4	91.6%
Lebanon	18.3	-	2.2	0.0	20.5	89.2%	0.1	0.3	0.7	-	1.1	10.5%
Oman	57.1	3.1	1.8	22.0	84.0	71.6%	15.4	0.6	0.6	-	16.5	92.9%
Qatar	63.4	3.2	1.5	-	68.2	97.7%	39.6	0.1	0.6	0.0	40.3	98.2%
Saudi Arabia	438.8	5.9	17.8	-	462.5	96.2%	51.7	1.8	6.5	0.2	60.3	85.8%
Syrian Arab Republic	57.5	1.7	2.4	0.0	61.6	96.2%	6.2	3.8	2.5	0.0	12.5	49.7%
United Arab Emirates	157.4	1.5	7.1	0.0	166.0	95.7%	23.8	0.6	1.2	-	25.6	92.8%
Yemen	23.7	2.4	1.5	0.0	27.6	94.7%	2.4	4.1	2.3	-	8.8	27.2%
Middle East	1 548.9	57.1	63.4	25.5	1 694.9	94.8%	250.4	36.7	34.5	0.6	322.2	77.7%

2010 Greenhouse-gas emissions

million tonnes of CO₂ equivalent using GWP-100

Energy	N ₂ O					Share of energy	HFCs	PFCs	SF ₆	Total			
	Industrial processes	Agriculture	Other	Total	Industrial processes		Total	Share of energy	GHG / GDP PPP *				
1.8	-	22.0	2.4	26.2	6.9%	-	-	-	190.5	35.6%	0.86	Bangladesh	
0.0	-	0.1	0.2	0.3	5.0%	0.4	-	-	19.0	65.9%	1.05	Brunei Darussalam	
0.3	-	8.1	8.0	16.4	1.7%	-	-	-	193.9	2.8%	6.97	Cambodia	
1.4	0.7	1.7	1.2	5.0	27.2%	0.1	2.7	4.3	301.0	91.1%	0.41	Chinese Taipei	
28.8	0.3	170.6	34.5	234.1	12.3%	13.4	1.7	5.8	2 776.0	68.0%	0.75	India	
4.1	0.2	65.6	21.4	91.3	4.5%	-	0.1	1.1	1 926.2	25.3%	2.07	Indonesia	
0.4	-	2.2	0.6	3.2	12.6%	4.2	-	-	95.3	78.8%	0.96	DPR of Korea	
1.0	0.9	10.4	2.8	15.0	6.4%	0.0	0.4	0.8	323.2	64.5%	0.83	Malaysia	
0.1	-	3.2	0.1	3.5	3.3%	-	-	-	69.4	19.9%	6.95	Mongolia	
0.8	-	12.9	12.5	26.3	3.2%	-	-	-	357.0	5.5%	5.02	Myanmar	
0.6	-	3.4	0.5	4.5	14.3%	-	-	-	32.4	19.2%	1.00	Nepal	
3.7	0.0	23.0	3.3	30.1	12.3%	-	-	1.0	336.6	54.0%	0.81	Pakistan	
0.8	0.0	9.4	2.3	12.5	6.1%	-	-	0.5	152.8	54.7%	0.46	Philippines	
0.1	0.7	0.0	1.0	1.9	4.7%	2.2	0.7	0.4	72.4	91.0%	0.27	Singapore	
0.3	-	1.3	0.5	2.1	13.7%	-	-	-	28.0	50.1%	0.29	Sri Lanka	
3.2	0.6	20.0	6.5	30.2	10.5%	-	-	1.4	422.3	62.2%	0.80	Thailand	
1.7	-	28.6	3.5	33.8	5.2%	-	-	-	306.5	56.5%	1.23	Vietnam	
0.6	-	9.2	7.6	17.4	3.3%	0.1	-	-	191.8	13.6%	1.59	Other Asia	
49.6	3.4	391.8	109.0	553.8	9.0%	20.6	5.6	15.2	7 794.2	49.6%	0.94	Asia	
58.1	12.9	415.1	64.2	550.3	10.6%	183.9	8.4	57.1	10 755.5	76.2%	1.18	People's Rep. of China	
0.2	-	-	0.3	0.5	41.0%	-	-	0.2	47.0	93.1%	0.16	Hong Kong, China	
58.3	12.9	415.1	64.5	550.8	10.6%	183.9	8.4	57.2	10 802.5	76.3%	1.15	China	
1.8	0.2	48.0	2.1	52.1	3.4%	0.5	0.1	0.4	327.6	59.9%	0.56	Argentina	
0.2	-	5.2	4.2	9.5	1.8%	-	-	-	144.5	17.1%	3.34	Bolivia	
7.4	1.9	165.0	33.2	207.6	3.6%	3.3	5.8	1.5	1 604.4	27.6%	0.82	Brazil	
0.7	0.1	20.1	4.3	25.1	2.7%	-	-	0.1	183.5	42.4%	0.47	Colombia	
0.1	0.0	1.3	0.2	1.5	5.2%	0.1	-	-	11.1	62.1%	0.23	Costa Rica	
0.2	0.5	4.5	0.6	5.8	3.3%	0.2	-	-	49.1	64.9%	0.79	Cuba	
0.2	-	1.5	0.4	2.1	10.2%	-	-	-	28.9	66.6%	0.35	Dominican Republic	
0.2	-	4.6	0.5	5.3	3.6%	0.1	-	-	57.4	65.7%	0.55	Ecuador	
0.1	-	1.0	0.2	1.4	7.2%	0.1	-	-	11.0	57.7%	0.30	El Salvador	
0.4	-	2.9	1.2	4.5	8.5%	0.8	-	-	43.7	28.3%	0.71	Guatemala	
0.1	-	1.2	0.2	1.5	7.2%	-	-	-	8.2	36.6%	0.83	Haiti	
0.1	-	2.4	0.6	3.1	3.9%	-	-	-	19.3	40.9%	0.72	Honduras	
0.1	-	0.4	0.2	0.6	10.8%	0.1	-	-	9.7	75.9%	0.52	Jamaica	
0.0	-	0.0	0.1	0.1	18.4%	-	-	-	4.5	97.5%	1.89	Netherlands Antilles	
0.1	-	3.0	0.3	3.4	3.4%	-	-	-	14.9	33.7%	0.79	Nicaragua	
0.1	-	1.0	0.3	1.4	6.2%	-	-	-	13.9	61.8%	0.31	Panama	
0.2	-	8.2	0.7	9.2	2.3%	-	-	-	41.7	15.1%	1.40	Paraguay	
0.3	-	7.1	0.9	8.3	3.7%	0.5	-	-	79.1	58.2%	0.32	Peru	
0.0	-	0.1	0.1	0.3	15.4%	-	-	-	58.0	95.6%	1.87	Trinidad and Tobago	
0.1	-	7.7	0.1	7.9	1.7%	0.1	-	-	34.3	21.1%	0.81	Uruguay	
0.8	0.0	11.7	3.3	15.8	5.1%	1.9	0.2	0.3	315.1	67.2%	1.00	Venezuela	
0.1	-	2.2	0.9	3.3	4.4%	0.0	-	0.0	43.5	44.1%	1.00	Other Non-OECD Americas	
13.4	2.6	299.2	54.8	370.0	3.6%	7.8	6.0	2.4	3 103.5	39.9%	0.74	Non-OECD Americas	
0.0	-	0.0	0.1	0.1	25.0%	-	0.3	-	27.0	96.9%	1.00	Bahrain	
1.9	0.9	18.6	2.5	23.9	8.0%	-	0.1	3.0	694.8	87.8%	0.86	Islamic Rep. of Iran	
0.5	-	2.5	1.9	4.9	10.3%	-	-	0.1	152.0	88.4%	1.49	Iraq	
0.1	-	0.3	0.2	0.6	10.5%	0.2	-	-	23.5	83.5%	0.74	Jordan	
0.2	-	0.1	0.4	0.7	28.8%	0.9	-	0.5	99.7	96.0%	0.80	Kuwait	
0.1	-	0.2	0.2	0.5	15.5%	-	-	-	22.1	83.7%	0.41	Lebanon	
0.1	-	0.8	0.2	1.1	9.5%	0.3	0.0	-	102.0	74.2%	1.49	Oman	
0.1	-	0.1	0.2	0.3	28.2%	-	-	-	108.9	97.7%	0.89	Qatar	
1.1	-	2.2	2.9	6.2	17.5%	0.3	-	2.6	531.9	93.5%	0.94	Saudi Arabia	
0.2	0.3	4.6	0.8	5.9	3.7%	-	-	-	80.0	82.1%	0.83	Syrian Arab Republic	
0.2	-	1.4	0.7	2.4	8.2%	-	0.4	1.0	195.4	93.6%	0.61	United Arab Emirates	
0.5	-	2.6	0.6	3.6	12.5%	-	-	-	39.9	72.5%	0.70	Yemen	
4.9	1.2	33.5	10.7	50.3	9.8%	1.8	0.8	7.2	2 077.2	89.6%	0.87	Middle East	

* GHG / GDP PPP ratio is expressed in kg of CO₂-equivalent per 2005 USD. The high GHG / GDP PPP ratio for Mongolia is due to high levels of peat decay.

MULTILINGUAL GLOSSARIES

français

French

Deutsch

German

Indicateurs principaux**Hauptkennzahlen**CO₂ Méthode sectorielle (Mt de CO₂)Sektorspezifischer Ansatz zur Bestimmung des CO₂-Ausstoßes (MtCO₂)

ATEP (PJ)

PEV (PJ)

PIB (milliards de \$US 2005)

BIP (Mrd. 2005 US\$)

PIB PPA (milliards de \$US 2005)

BIP kaufkraftbereinigt (Mrd. 2005 US\$)

Population (millions)

Bevölkerung (Mio.)

CO₂ / ATEP (tCO₂ par TJ)CO₂ / PEV (tCO₂ pro TJ)CO₂ / PIB (kgCO₂ par \$US 2005)CO₂ / BIP (kgCO₂ pro 2005 US\$)CO₂ / PIB PPA (kgCO₂ par \$US 2005)CO₂ / BIP kaufkraftbereinigt (kgCO₂ pro 2005 US\$)CO₂ / Population (tCO₂ par habitant)tCO₂ pro Kopf**Emissions de CO₂ et facteurs -****CO₂-Ausstoß und Emissionsquellen -****Décomposition de Kaya****Kaya-Formel**Emissions de CO₂CO₂-Ausstoß

Population

Bevölkerung

PIB par habitant (PIB/hab)

Pro-Kopf-Einkommen

Intensité énergétique (ATEP/PIB)

Energieintensität (PEV/BIP)

Intensité en carbone (CO₂/ATEP)CO₂-Intensität (CO₂/PEV)

Les rapports sont fondés sur la méthode sectorielle.

Verhältniszahlen basieren auf dem Sektorspezifischen Ansatz.

Emissions de CO₂ par secteur en 2011**CO₂-Emissionen nach Sektoren (2011)***millions de tonnes de CO₂**Mio. Tonnen CO₂***Méthode sectorielle****Sektorspezifischer Ansatz**

Production d'électricité et de chaleur (activité principale)

Öffentliche Elektrizitäts- und Wärmeerzeugung

Autoproducteurs non spécifiés

Nicht zugeordnete Eigenerzeuger

Autres industries de l'énergie

Autre Energieindustrien

Industries manufacturières et de construction

Verarbeitende Industrie und Baugewerbe

Transport

Verkehr

*dont: transport routier**davon: Straßenverkehr*

Autres secteurs

Autre Sektoren

*dont: résidentiel**davon: Haushalte***Méthode de référence****Referenzansatz**

Ecart dus aux pertes et/ou aux transformations

Abweichungen infolge von Verlusten und/oder Umwandlung

Ecart statistiques

Statistische Differenzen

*Pour mémoire : soutes maritimes internationales**Anmerkung: Tanklager für die internationale Seeschifffahrt**Pour mémoire : soutes aériennes internationales**Anmerkung: Tanklager für die internationale zivile Luftfahrt*

La catégorie Autres inclut les déchets industriels et les déchets urbains non renouvelables.

Die Kategorie "Autre" beinhaltet Industrieabfälle und nichterneuerbare städtische Abfälle.

La catégorie "Monde" inclut les soutages maritimes et aériens internationaux.

Globaler CO₂-Ausstoß beinhaltet Tanklager für die internationale Seeschifffahrt und die international zivile Luftfahrt

italiano

Italian

Japanese

Japanese

Principali indicatori**主要指標**CO₂ Metodo settoriale (Mt di CO₂)CO₂ 排出量 セクター別 アプローチ (二酸化炭素 百万トン)

ATEP (PJ)

一次エネルギー供給 (PJ)

PIL (miliardi di US\$ 2005)

GDP (10億 米ドル、2005年 価格)

PIL PPA (miliardi di US\$ 2005)

GDP PPP (購買力平価ベースのGDP) (10億 米ドル、2005年 価格)

Popolazione (milioni)

人口 (百万)

CO₂ / ATEP (t di CO₂ per TJ)CO₂ 排出量 / 一次エネルギー供給 (CO₂ トン / PJ)CO₂ / PIL (kg di CO₂ per US\$ 2005)CO₂ 排出量 / GDP (CO₂ キログラム / 米ドル、2005年 価格)CO₂ / PIL PPA (kg di CO₂ per US\$ 2005)CO₂ 排出量 / GDP PPP (CO₂ キログラム / 米ドル、2005年 価格)CO₂ / Popolazione (t di CO₂ per abitante)一人当たり CO₂ 排出量 (二酸化炭素 トン / 人)**Emissioni CO₂ e fattori - Identità di Kaya****CO₂排出量・変化要因 茅恒等式**Emissioni CO₂CO₂排出量

Popolazione

人口

PIL / Popolazione (PIL per capita)

一人当たり GDP (GDP/人)

Intensità energetica (ATEP / PIL)

エネルギー原単位 (TPES/GDP)

Intensità di carbonio (CO₂ / ATEP)炭素集約度 (CO₂/TPES)

I rapporti sono basati sul metodo settoriale.

レートはセクター別アプローチを基に算出

Emissioni di CO₂ per settore in 2011**2011年の部門別二酸化炭素排出量***milioni di tonnellate di CO₂*CO₂ 百万トン**Metodo settoriale****セクター別 アプローチ**

Produzione di elettricità e di calore (attività principale)

電気・熱供給事業者

Auto-produttori non specificati

自家発電

Altri settori energetici

その他のエネルギー産業

Industrie manifatturiere e della costruzione

製造業・建設業

Settore dei trasporti

運輸用

di cui: trasporti stradali

道路輸送

Altri settori

その他

di cui: settore domestico

国内民生・家庭用

Metodo di base**レファレンス・アプローチ**

Differenza dovuta alle perdite e/o alle trasformaz.

転換ロス等に起因する誤差

Differenza statistica

統計誤差

Memo: bunkeraggi marittimi internazionali

メモ：国際海運バンカー

Memo: bunkeraggi aerei internazionali

メモ：国際航空バンカー

La categoria Altri comprende rifiuti industriali e rifiuti urbani non rinnovabili.

「その他」は「産業廃棄物」及び「再利用不可の都市廃棄物」を含む

La categoria Mondo comprende bunkeraggi marittimi internazionali e bunkeraggi aerei internazionali.

世界（国際海運・国際航空部門を含む）

español
Spanish

русский
Russian

Indicadores Básicos

CO₂ Metodo Sectorial (Mt de CO₂)
TPES (PJ)
PIB (billón de 2005 USD)
PIB PPP (billón de 2005 USD)
Población (millones)

CO₂ / TPES (tCO₂ por TJ)
CO₂ / PIB (kgCO₂ por 2005 USD)
CO₂ / PIB PPP (kgCO₂ por 2005 USD)
CO₂ / Población (tCO₂ per capita)

**Emisiones de CO₂ y factores -
Descomposición Kaya**
Emisiones de CO₂
Población
PIB por población (PIB per capita)
Intensidad energética (TPES/PIB)
Intensidad de carbono (CO₂/TPES)

Основные показатели

CO₂ секторный подход (млнт CO₂)
ОППТЭ (PJ)
ВВП (миллиардов долларов США 2005 г.)
ВВП ППС (миллиардов долларов США 2005 г.)
Население (миллионов человек)

CO₂/ОППТЭ (тCO₂ на тнэ)
CO₂/ВВП (кгCO₂ на доллар США 2005 г.)
CO₂/ВВП ППС (кгCO₂ на доллар США 2005 г.)
CO₂/Численность населения (тнэ на человека)

Выбросы и источники CO₂ - уравнение Кaya
Выбросы CO₂
Население
ВВП на население (ВВП на душу населения)
Энергоемкость (ОППТЭ/ВВП)
Карбоноемкость (CO₂/ОППТЭ)

Emisiones de CO₂ por Sector en 2011

millón de toneladas de CO₂

Metodo Sectorial

Producción de electricidad y calor (actividad principal)
Autoprodutores no especificados
Otras Industrias de Energía
Industrias Manufactureras y Construcción
Transporte
del cual: Carretera
Otros sectores
del cual: Residencial

Metodo Base

Diferencias por Pérdidas y/o Transformación
Diferencias estadísticas
Memo: Bunkers de Navegación Internacional
Memo: Bunkers de Aviación Internacional

Otros incluye residuos industriales y residuos municipales no renovables.

La categoría Mundial incluye búnkers de navegación Internacional y búnkers de Aviación Internacional

Выбросы CO₂ в 2011 г. по отраслям

миллионов тон CO₂

секторный подход

Электростанции и теплоцентрали общего пользования
Электростанции и теплоцентрали предприятий
Прочие топливно-энергетические отрасли
Обрабатывающие отрасли промышленности и строительство
Транспорт (включая международную морскую бункеровку)
в том числе: Автомобильный
Прочие отрасли
в том числе: Жилищно-коммунальное хозяйство

системный подход

Расхождение от потерь и/или переработки
Статистическое расхождение
К сведению: Международная морская бункеровка
К сведению: Международная воздушная бункеровка

Категория Другие включает промышленные отходы и ком.-быт. твердые отходы.

Категория Мир включает международную морскую бункеровку и международную воздушную бункеровку

Energy Data Manager / Statistician

Possible Staff Vacancies

International Energy Agency, Paris, France

The IEA

The International Energy Agency, based in Paris, acts as energy policy advisor to 28 member countries in their effort to ensure reliable, affordable and clean energy for their citizens. Founded during the oil crisis of 1973-74, the IEA's initial role was to co-ordinate measures in times of oil supply emergencies. As energy markets have changed, so has the IEA. Its mandate has broadened to incorporate the "Three E's" of balanced energy policy making: energy security, economic development and environmental protection. Current work focuses on climate change policies, market reform, energy technology collaboration and outreach to the rest of the world, especially major consumers and producers of energy like China, India, Russia and the OPEC countries.

The Energy Data Centre, with a staff of around 30 people, provides a dynamic environment for young people just finishing their studies or with one to two years of work experience.

Job description

The data managers/statisticians compile, verify and disseminate information on all aspects of energy including production, transformation and consumption of all fuels, renewables, the emergency reporting system, energy efficiency indicators, CO₂ emissions, and energy prices and taxes. The data managers are responsible for receiving, reviewing and inputting data submissions from member countries and other sources into large computerised databases. They check for completeness, correct calculations, internal consistency, accuracy and consistency with definitions. Often this entails proactively investigating and helping to resolve anomalies in collaboration with national administrations of member and non-member countries. The data managers/statisticians also play a key role in helping to design and implement computer macros used in the preparation of their energy statistics publication(s).

Principal Qualifications

- University degree in a topic relevant to energy, computer programming or statistics. We currently have staff with degrees in Mathematics, Statistics, Information Technology, Economics, Engineering, Physics, Chemistry, Environmental Studies, Hydrology, Public Administration and Business.
- Experience in the basic use of databases and computer software. Good computer programming skills in Visual Basic.
- Ability to work accurately, pay attention to detail and work to deadlines. Ability to deal simultaneously with a wide variety of tasks and to organise work efficiently.
- Good communication skills; ability to work well in a team and in a multicultural environment, particularly in liaising with contacts in national administrations and industry.
- Very good knowledge of one of the two official languages of the Organisation (English or French). Knowledge of other languages would be an advantage.
- Some knowledge of energy industry operations and terminology would also be an advantage, but is not required.

Nationals of any OECD Member country are eligible for appointment. Basic salaries start at 3 158 Euros per month. The possibilities for advancement are good for candidates with appropriate qualifications and experience. Tentative enquiries about future vacancies are welcomed from men and women with relevant qualifications and experience. Applications in French or English, accompanied by a curriculum vitae, should be sent to:

Office of Management and Administration
International Energy Agency
9 rue de la Fédération
75739 Paris Cedex 15, France
Email: recruitment@iea.org

On-Line Data Services

Users can instantly access not only all the data published in this book, but also all the time series used for preparing this publication and all the other statistics publications of the IEA. The data are available on-line, either through annual subscription or pay-per-view access. More information on this service can be found on our website: <http://data.iea.org>

Ten Annual Publications

■ Energy Statistics of OECD Countries, 2013 Edition

No other publication offers such in-depth statistical coverage. It is intended for anyone involved in analytical or policy work related to energy issues. It contains data on energy supply and consumption in original units for coal, oil, natural gas, biofuels/waste and products derived from these primary fuels, as well as for electricity and heat. Complete data are available for 2010 and 2011 and supply estimates are available for the most recent year (*i.e.* 2012). Historical tables summarise data on production, trade and final consumption. Each issue includes definitions of products and flows and explanatory notes on the individual country data.

Published July 2013 - Price €120

■ Energy Balances of OECD Countries, 2013 Edition

A companion volume to *Energy Statistics of OECD Countries*, this publication presents standardised energy balances expressed in million tonnes of oil equivalent. Energy supply and consumption data are divided by main fuel: coal, oil, natural gas, nuclear, hydro, geothermal/solar, biofuels/waste, electricity and heat. This allows for easy comparison of the contributions each fuel makes to the economy and their interrelationships through the conversion of one fuel to another. All of this is essential for estimating total energy supply, forecasting, energy conservation, and analysing the potential for interfuel substitution. Complete data are available for 2010 and 2011 and supply estimates are available for the most recent year (*i.e.* 2012). Historical tables summarise key energy and economic indicators as well as data on production, trade and final consumption. Each issue includes definitions of products and flows and explanatory notes on the individual country data as well as conversion factors from original units to tonnes of oil equivalent.

Published July 2013 - Price €120

■ Energy Statistics of Non-OECD Countries, 2013 Edition

This publication offers the same in-depth statistical coverage as the homonymous publication covering OECD countries. It includes data in original units for more than 100 individual countries and nine main regions. The consistency of OECD and non-OECD countries' detailed statistics provides an accurate picture of the global energy situation for 2010 and 2011. For a description of the content, please see *Energy Statistics of OECD Countries* above.

Published August 2013 - Price €120

■ **Energy Balances of Non-OECD Countries, 2013 Edition**

A companion volume to the publication *Energy Statistics of Non-OECD Countries*, this publication presents energy balances in thousand tonnes of oil equivalent and key economic and energy indicators for more than 100 individual countries and nine main regions. It offers the same statistical coverage as the homonymous publication covering OECD countries, and thus provides an accurate picture of the global energy situation for 2010 and 2011. For a description of the content, please see *Energy Balances of OECD Countries* above.

Published August 2013 - Price €120

■ **Electricity Information 2013**

This reference document provides essential statistics on electricity and heat for each OECD member country by bringing together information on production, installed capacity, input energy mix to electricity and heat production, input fuel prices, consumption, end-user electricity prices and electricity trades.

Published August 2013 - Price €150

■ **Coal Information 2013**

This well-established publication provides detailed information on past and current evolution of the world coal market. It presents country-specific statistics for OECD member countries and selected non-OECD countries on coal production, demand, trade and prices. This publication represents a key reference tool for all those involved in the coal supply or consumption stream, as well as institutions and governments involved in market and policy analysis of the world coal market.

Published August 2013 - Price €165

■ **Natural Gas Information 2013**

A detailed reference work on gas supply and demand, covering not only OECD countries but also the rest of the world. Contains essential information on LNG and pipeline trade, gas reserves, storage capacity and prices. The main part of the book, however, concentrates on OECD countries, showing a detailed gas supply and demand balance for each individual country and for the three OECD regions, as well as a breakdown of gas consumption by end-user. Import and export data are reported by source and destination.

Published August 2013 - Price €165

■ **Oil Information 2013**

A comprehensive reference book on current developments in oil supply and demand. The first part of this publication contains key data on world production, trade, prices and consumption of major oil product groups, with time series back to the early 1970s. The second part gives a more detailed and comprehensive picture of oil supply, demand, trade, production and consumption by end-user for each OECD country individually and for OECD regions. Trade data are reported extensively by origin and destination.

Published August 2013 - Price €165

■ Renewables Information 2013

This reference document brings together in one volume essential statistics on renewables and waste energy sources. It presents a detailed and comprehensive picture of developments for renewable and waste energy sources for each of the OECD member countries, encompassing energy indicators, generating capacity, electricity and heat production from renewable and waste sources, as well as production and consumption of renewable and waste products.

Published August 2013 - Price €110

■ CO₂ Emissions from Fuel Combustion, 2013 Edition

In order for nations to tackle the problem of climate change, they need accurate greenhouse gas emissions data. This publication provides a basis for comparative analysis of CO₂ emissions from fossil fuel combustion, a major source of anthropogenic emissions. The data in this book are designed to assist in understanding the evolution of the emissions of CO₂ from 1971 to 2011 for more than 140 countries and regions by sector and by fuel. Emissions were calculated using IEA energy databases and the default methods and emissions factors from the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*.

Published November 2013 - Price €165

Two Quarterlies

■ Oil, Gas, Coal and Electricity, Quarterly Statistics

This publication provides up-to-date, detailed quarterly statistics on oil, coal, natural gas and electricity for OECD countries. Oil statistics cover production, trade, refinery intake and output, stock changes and consumption for crude oil, NGL and nine selected oil product groups. Statistics for electricity, natural gas and coal show supply and trade. Import and export data are reported by origin and destination. Moreover, oil as well as hard coal and brown coal production are reported on a worldwide basis.

Published Quarterly - Price €120, annual subscription €380

■ Energy Prices and Taxes

This publication responds to the needs of the energy industry and OECD governments for up-to-date information on prices and taxes in national and international energy markets. It contains crude oil import prices by crude stream, industry prices and consumer prices. The end-user prices for OECD member countries cover main petroleum products, gas, coal and electricity. Every issue includes full notes on sources and methods and a description of price mechanisms in each country. Time series availability varies with each data series.

Published Quarterly - Price €120, annual subscription €380

Electronic Editions

■ CD-ROMs and Online Data Services

To complement its publications, the Energy Data Centre produces CD-ROMs containing the complete databases which are used for preparing the statistics publications. State-of-the-art software allows you to access and manipulate all these data in a very user-friendly manner and includes graphic facilities. These databases are also available on the internet from our online data service.

Annual CD-ROMS / Online Databases

- | | |
|---|------------------------------------|
| ■ Energy Statistics of OECD Countries, 1960-2012 | Price: €550 (single user) |
| ■ Energy Balances of OECD Countries, 1960-2012 | Price: €550 (single user) |
| ■ Energy Statistics of Non-OECD Countries, 1971-2011 | Price: €550 (single user) |
| ■ Energy Balances of Non-OECD Countries, 1971-2011 | Price: €550 (single user) |
| ■ <i>Combined subscription of the above four series</i> | <i>Price: €1 400 (single user)</i> |
| ■ Electricity Information 2013 | Price: €550 (single user) |
| ■ Coal Information 2013 | Price: €550 (single user) |
| ■ Natural Gas Information 2013 | Price: €550 (single user) |
| ■ Oil Information 2013 | Price: €550 (single user) |
| ■ Renewables Information 2013 | Price: €400 (single user) |
| ■ CO ₂ Emissions from Fuel Combustion, 1971-2011 | Price: €550 (single user) |

Quarterly CD-ROMs / Online Databases

- | | |
|---------------------------|---|
| ■ Energy Prices and Taxes | Price: (four quarters) €900 (single user) |
|---------------------------|---|

A description of these services is available on our website: <http://data.iea.org>

Other Online Services

■ The Monthly Oil Data Service

The IEA Monthly Oil Data Service provides the detailed databases of historical and projected information which is used in preparing the IEA's monthly *Oil Market Report* (OMR). The IEA Monthly Oil Data Service comprises three packages available separately or combined as a subscriber service on the Internet. The data are available at the same time as the official release of the Oil Market Report.

The packages include:

- | | |
|---------------------------------------|------------------------------------|
| ■ Supply, Demand, Balances and Stocks | Price: €6 000 (single user) |
| ■ Trade | Price: €2 000 (single user) |
| ■ Field-by-Field Supply | Price: €3 000 (single user) |
| ■ <i>Complete Service</i> | <i>Price: €9 000 (single user)</i> |

A description of this service is available on our website: www.iea.org/statistics/mods

■ The Monthly Gas Data Service

The service provides monthly natural gas data for OECD countries:

- supply balances in terajoules and cubic metres;
- production, trade, stock changes and levels where available, gross inland deliveries, own use and losses;
- highly detailed trade data with about 50 imports origins and exports destinations;
- LNG trade detail available from January 2002.

The databases cover the time period January 1984 to current month with a time lag of two months for the most recent data.

- Monthly Gas Data Service: Natural Gas Balances & Trade
Historical plus 12 monthly updates Price: €800 (single user)

For more information consult: www.iea.org/statistics/mgds

Moreover, the IEA statistics website contains a wealth of free statistics covering oil, natural gas, coal, electricity, renewables, energy-related CO₂ emissions and more for over 140 countries and historic data for the last 20 years. It also contains Sankey flows to enable users to explore visually how a country's energy balance shifts over up to 40 years, starting with production and continuing through transformation to see important changes in supply mix or share of consumption. The website also includes selected databases for demonstration.

The IEA statistics website can be accessed at www.iea.org/statistics/



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